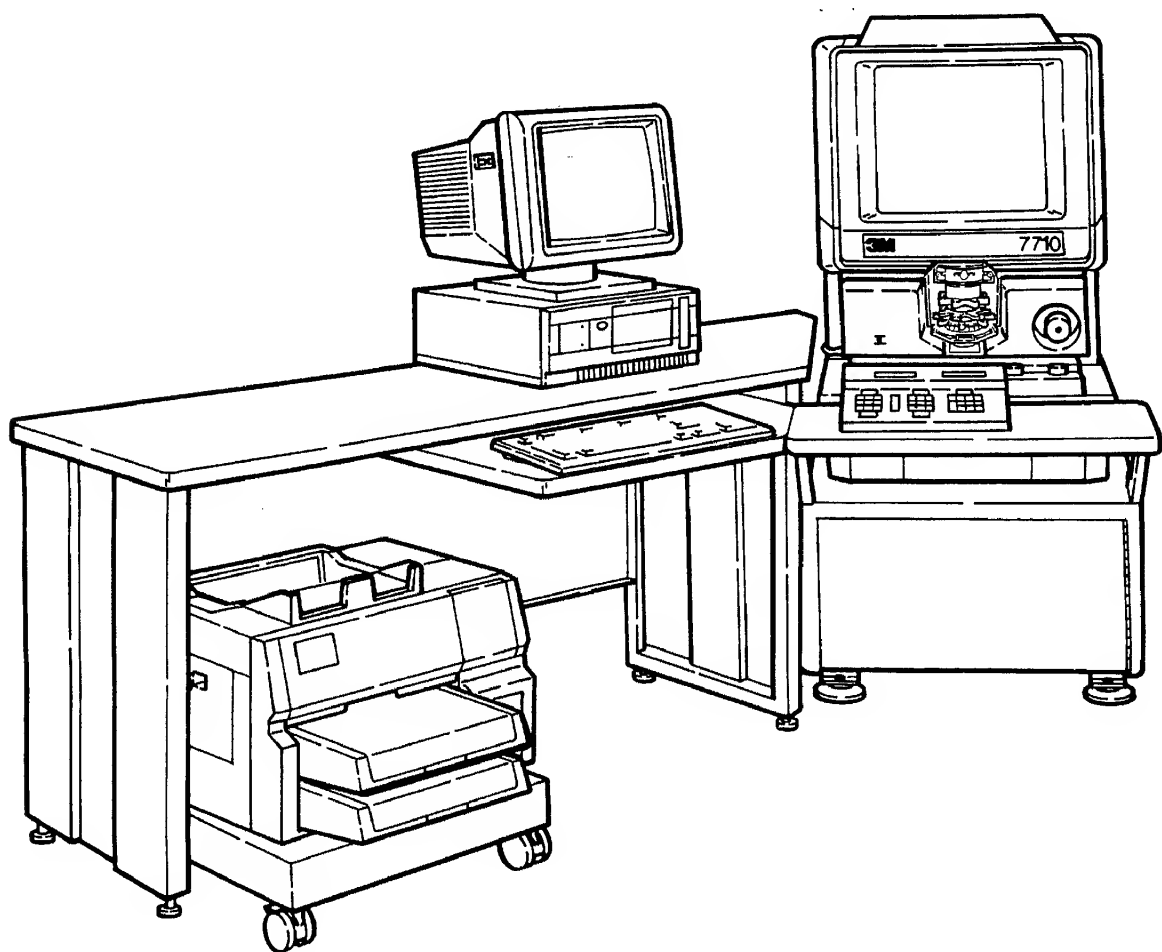


Operator's Guide

Model 7710 Reader-Scanner System



78-6970-4480-4

3M Office Document Systems Division



WARNING

THE 3M MODEL 7710 READER-SCANNER SYSTEM GENERATES AND USES RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED PROPERLY, IN ACCORDANCE WITH THESE OPERATING INSTRUCTIONS, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. IT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS B COMPUTING DEVICE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE WHEN OPERATED IN A COMMERCIAL ENVIRONMENT.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT HIS OWN EXPENSE WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

WARNING

"THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS."

"LE PRÉSENT APPAREIL NUMÉRIQUE N'EMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE LA CLASSE A PRESCRITES DANS LE RÈGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA."

WARNING

THE 3M MODEL 7941 LASER PRINTER IS CONSIDERED A CDRH CLASS 1 LASER DEVICE, SAFE FOR OFFICE AND ELECTRONIC DATA PROCESSING USE. THE PRINTER CONTAINS A 5 MILLIWATT, 760 TO 810 NANOMETER WAVELENGTH, GaAlAs LASER DIODE. DIRECT (OR INDIRECT REFLECTED) EYE CONTACT WITH THE LASER BEAM MAY CAUSE SERIOUS EYE DAMAGE. SAFETY PRECAUTIONS AND INTERLOCK MECHANISMS HAVE BEEN DESIGNED TO PREVENT ANY POSSIBLE LASER BEAM EXPOSURE TO THE OPERATOR.

WARNING

USE ONLY THE FOLLOWING SHIELDED I/O CABLES TO ENSURE THAT THIS SYSTEM CONTINUES TO COMPLY WITH THE RADIATED EMISSION LIMITS:

7710/7960 CABLE	78-8059-6921-5
7941/7960 CABLE #1	78-8075-6754-6
7941/7960 CABLE #2	78-8075-6679-5

Table of Contents M7710 Operator's Guide

i

Introduction

System Introduction	I-2
Environmental Conditions	I-5
Important Safeguards	I-5
Notes on Image Processing in the 7710	I-6

Controls and Indicators

7710 Reader-Scanner	CI-2
7756 Page Search	CI-8
210 CAT (Cartridge ANSI Transport)	CI-10
7941 Laser Printer	CI-11
7960 Controller and Monitor	CI-13
110 RFT (Roll Film Transport)	CI-16
Fiche Handlers	CI-17

Operating Sequence

Starting Up the System	OS-2
Loading a Film Cartridge	OS-4
Adjusting the Viewed Image	OS-5
Locating a Desired Image	OS-6
Setting the Reader-Scanner Operating Parameters	OS-7
Making a Print	OS-9
FAXing a Document Image Package	OS-11
Using a Host Computer to Retrieve and Print or FAX Images	OS-14
Shutting Down the System	OS-16

Display Codes and Troubleshooting

Display Codes and Messages	DT-2
210 CAT	DT-2
7710 Reader-Scanner	DT-3
7941 Laser Printer	DT-5
7756 Page Search	DT-8
7960 Controller	DT-14
Troubleshooting	DT-24
Image Retrieval (Fiche Handlers)	DT-24
Image Retrieval (110 RFT)	DT-25
Image Retrieval (210 CAT)	DT-26
Image Retrieval (7756 Page Search)	DT-27
Image Viewing (7710 Reader-Scanner)	DT-28
Image Printing (7710 Reader-Scanner)	DT-30
Image Printing (7941 Laser Printer)	DT-31

Display Codes and Troubleshooting (continued)

Operator Tests	DT-34
Version	DT-34
Printed Test Pattern	DT-34
FAXed Test Pattern	DT-36
Reset the 7710	DT-37
Scan Count	DT-37
Printer Test	DT-38
Calling for Service	DT-39

Reader-Scanner

Changing the Film Polarity Parameter	RS-2
Changing the Number of Prints	RS-4
Setting the Paper Size and Image Resolution	RS-5
Changing the Threshold and Gain	RS-6
Changing the Exposure	RS-8
Setting the Mask Parameters	RS-9
To Turn Off Masking	RS-9
To Use Automatic Masking	RS-11
To Use Manual Masking	RS-16
To Use Special/Top Masking	RS-20
To Use Special/Left Masking	RS-22
Setting the Photo Parameters	RS-30
Changing a Parameter Setting for One Print or FAX Cycle	RS-32
Resetting a Parameter to the Default Setting	RS-33
Changing a Power On Default Parameter Setting	RS-34
Storing and Retrieving Parameter Macros	RS-35
Replacing the Projection Lamp	RS-37
Changing the Zoom Lens Assembly	RS-40
Cleaning the Zoom Lens	RS-41
Specifications	RS-42
7710 Reader-Scanner Options	RS-43

Laser Printer

Operator Maintenance	LP-2
Adding Paper	LP-2
Replacing the Toner Cartridge and Cleaning Pad	LP-4
Replacing the Used Toner Collection Bottle	LP-8
Replacing the OPC Cartridge	LP-9
Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp	LP-11
Cleaning the Separation Pawls	LP-15
Clearing a Paper Jam	LP-17
Replacing the Line Fuse	LP-22
Specifications	LP-23

Film Transport (Cartridge)

Cleaning the Glass Flats	CF-2
Cleaning the Drive Roller	CF-3
Installing the 210 CAT	CF-4
Removing the 210 CAT	CF-5
Removing a Jammed Film Cartridge	CF-6
Repairing Broken or Detached Film	CF-7
Specifications	CF-10
Leaders and Trailers	CF-11

FAX Controller

Introduction	FC-2
Selecting Options from the Main Menu	FC-3
Transferring Images from the 7710 to the 7960 Controller	FC-4
FAXing a Document Package	FC-6
Variations in the FAXing Process	FC-6
Manual and On-Line Systems	FC-6
Sending a Document Package to Multiple Locations	FC-6
The MMMFAX Configuration File	FC-6
FAXing with Manual Systems--Creating the Cover Sheet	FC-7
General Concepts	FC-7
Cover Sheet Format	FC-9
Receiver and Sender Fields	FC-10
Subject Field	FC-10
Delayed Delivery Field	FC-10
Additional Subject Paragraph	FC-11
Broadcast Cover Sheet	FC-12
Tagging Records from the Receiver Phone List for Broadcast	FC-14
FAXing with On-Line Systems	FC-15
Initiate On-Line FAX	FC-15
Temporarily Interrupting Step or Auto-Scanning	FC-15
Creating and Editing FAX Receiver and Sender Phone Lists	FC-16
Status of FAX Queues	FC-18
Status of Processed Queue	FC-19
Status of Pending Queue	FC-21
Options Management Menu	FC-23
Printing the Processed Queue Stats	FC-23
Backing Up the Phone List Files	FC-24
Restoring the Phone List Files	FC-25
Changing the MMMFAX Configuration File	FC-26
Formatting a Backup Diskette	FC-31
Specifications	FC-32
Controller	FC-32
Monitor	FC-33

Page Searcher

Page Search Modes of Operation	PS-2
Checking the Current Search Mode	PS-2
Locating an Image Using the 7756 Page Search	PS-3
Printing by Batches from the Page Search	PS-5
Range Auto-Printing from the Page Search	PS-6
FAXing Document Packages	PS-7
FAXing a Single Document Package from the Reader-Scanner	PS-7
FAXing by Batches from the Page Search	PS-8
Range Auto-FAXing from the Page Search	PS-9
Control Key Functions	PS-10
Main Keys	PS-10
Miscellaneous Keys	PS-13
Memory Register Keys	PS-16
Step Keys	PS-19
Auto Keys	PS-23
Memory Register Autoscanning Exercise	PS-28
Summary of Key Functions and Command Key Sequences	PS-29
Search Modes	PS-36
Modes 1, 2, 3, and 4 (Films with One Blip Size)	PS-36
Mode 5 (Batch B-A) Blipped Films)	PS-37
Modes 6, 7, 8, and 9 (Films with Two Blip Sizes)	PS-38
Modes 10, 11, 12, and 13 (Films with Three Blip Sizes)	PS-39
Mode 14 (Odometer mode for Films with no Blips)	PS-40
Mode 15 (Miracode Film)	PS-40
Modes 16, 17, and 18 (Films with One Blip Size)	PS-41
Reading Film Control Codes	PS-42
Cleaning the Filter Glass and Plastic Window	PS-44
Operating in a Computer Communications Setup	PS-46
Introduction	PS-46
Preparing for Operation in a Communications Mode	PS-46
To Direct Search in any Mode	PS-47
Performing a Download in a 3M Enhanced Download Mode	PS-47
Performing a Download in 3M Download Mode	PS-47
Performing a Download in CAR Mode	PS-48
Going to Direct Search Mode from 3M Download	PS-48
Stepping, Auto-Scanning, or Auto-Printing after a Download	PS-48
Temporarily Interrupting Step, Autoprint, or Autoscan	PS-49
Special Two-Way Messaging Functions	PS-49
Communications Command Codes	PS-50
Typical 7710/API Application with Controller	PS-51
7756 Page Search Specifications	PS-54
Blip Encoding Specifications	PS-55

Film Transport (Roll)

Loading Film	RF-2
Locating an Image	RF-4
Cleaning the Glass Flats	RF-6
Removing the Film Transport	RF-7
Installing the Film Transport	RF-8
Specifications	RF-9

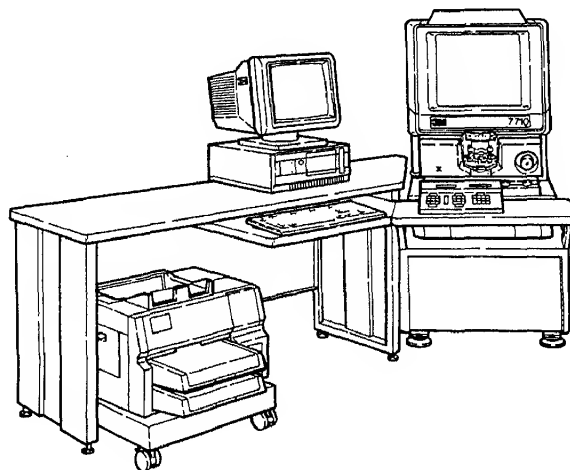
Film Transports (Fiche)

Locating an Image	FT-2
Fiche Handlers	FT-2
Roll Film Handler	FT-5
Cleaning the Glass Flats	FT-9
915 and 917 Single Fiche Handlers	FT-9
916 Dual Fiche Handler	FT-10
658 Single Fiche and Roll Film Handler	FT-11
Changing the Film Handlers	FT-12

This manual provides detailed operating instructions for the 3M Model 7710 Reader-Scanner System. It is recommended that new users of the system refer first to the accompanying 7710 Operator's Overview to gain a general understanding of system operation before using this Operator's Guide. After becoming acquainted with the 7710 via the Overview, refer to the appropriate sections in the Operator's Guide for detailed information. This manual is divided into tabbed sections as follows:

Information in this manual is grouped into tabbed sections:

- **Controls and Indicators** - Briefly describes the locations and functions of the controls and indicators of the system.
- **Operating Sequence** - Provides a general sequence for operating the system.
- **Display Codes and Troubleshooting** - Lists display codes and messages encountered during operation and provides system troubleshooting tables.
- **Reader-Scanner** - Gives detailed instructions for setting the system parameters, and includes maintenance procedures and specifications for the 7710 Reader-Scanner.
- **Laser Printer** - Furnishes maintenance procedures, specifications, and supplies needed for the 7941 Laser Printer.
- **Fax Controller** - Outlines procedures for selecting options from the Main Menu, transferring images from the 7710, FAXing a document package, editing the FAX Cover Sheet, managing receiver and sender phone lists, checking the status of FAX queues, and managing a backup phone list file.
- **Film Transport (Cartridge)** - Provides maintenance procedures for the 210 CAT (Cartridge ANSI Transport) used in most 7710 Reader-Scanner Systems.
- **Page Search** - Gives detailed page search functions, maintenance procedures, and specifications for the 7756 Page Search. Includes information on serial communications with a host computer.
- **Film Transport (Roll)** - Provides operating/maintenance procedures for the 110 RFT (Roll Film Transport).
- **Film Transports (Fiche)** - Provides operating and maintenance procedures for the 915, 916, 917, and 658 Fiche Handlers.



System Introduction

This paragraph introduces you to your 3M Model 7710 Reader-Scanner System. The heart of this system is a 7710 Reader-Scanner, which displays images from microfilm and digitizes them for electronic transfer. The system includes a Film Transport (several optional types are available) that mounts on the Reader-Scanner and is used to locate desired documents on microfilm. The system also includes a 3MFAX Program Controller, which receives digitized images from the Reader-Scanner and transmits them to the local Laser Printer or to remote locations via telephone lines. A 7710 system with these basic components is shown in Figure 1 below.

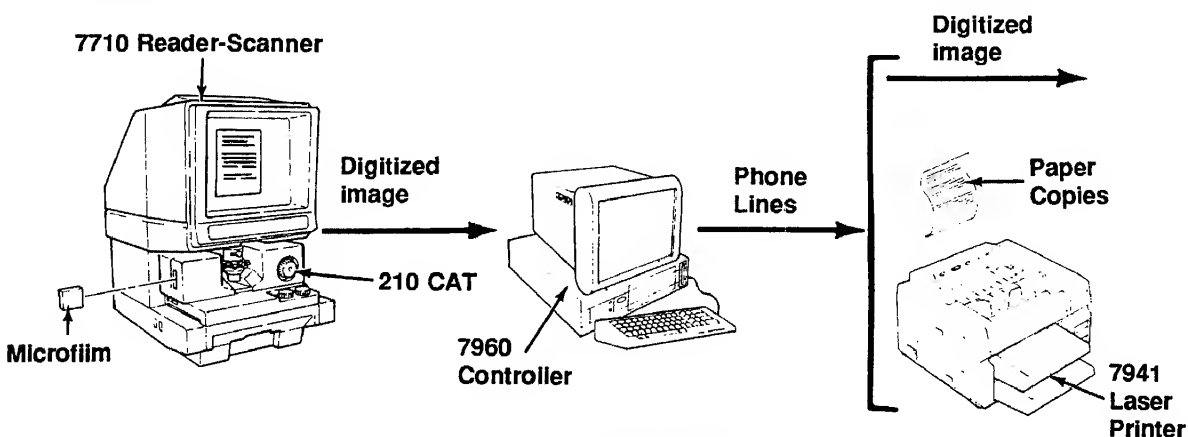


Figure 1. 7710 Basic System

A 7710 Reader-Scanner System can be expanded to include an automatic Page Search unit as shown in Figure 2, which can be used to rapidly retrieve documents on blipped microfilm in a number of different modes. The Page Search can be operated manually from a keypad, or it can be controlled by a host computer via an Asynchronous Protocol Interface (API). The system basic and optional components are described in more detail on the next page.

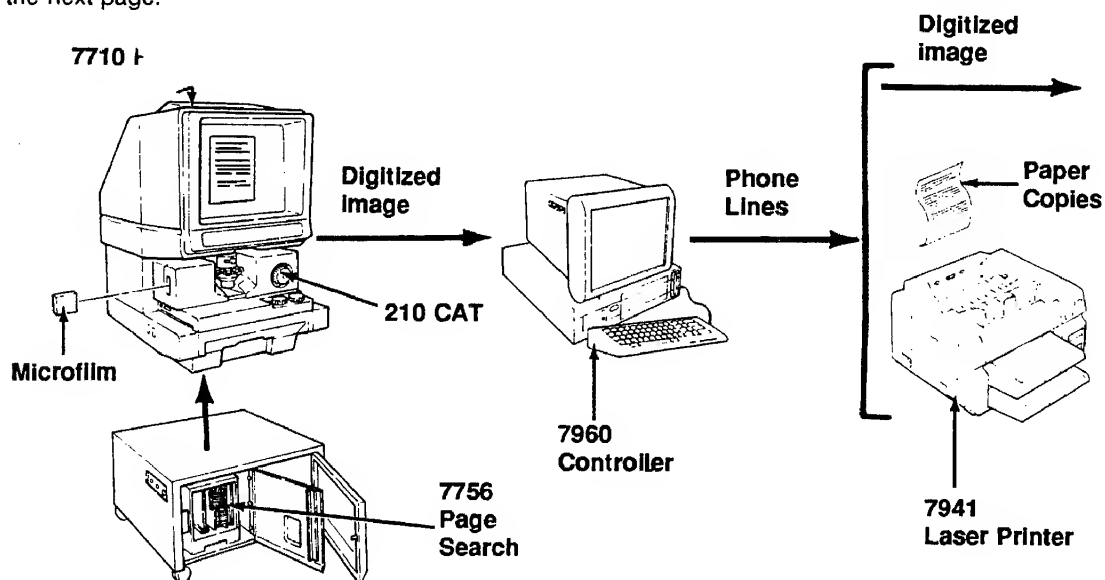


Figure 2. 7710 System with Options

System Introduction (continued)**7710 Reader-Scanner**

The 7710 Reader-Scanner is used to display positive or negative microfilm images. If desired, the microfilm image can be scanned and digitized after viewing. The digitized image can then be transferred to the 7960 Controller for printing by the local 7941 Laser Printer or FAXing to a remote location. Four optional Zoom Lenses (6.5X to 14X, 12X to 24X, 14X to 32X, and 20X to 47X) are available as part of the optical system. The 6.5X to 14X and 12X to 24X Zoom Lenses require an Adjustable Condenser Lens installed by your Service Technician. The 7710 features image compression, image clarification, electronic masking, a photo mode, and an automated step test.

7960 Controller

The 7960 Controller receives digitized images from the 7710 Reader-Scanner for printing by the local Laser Printer and for FAXing to remote locations on any Group III FAX machine. The Monitor displays menus, cover sheets, and receiver and sender phone lists used by the Controller. The Controller has dedicated MMMFAX Program software installed.

7941 Laser Printer

The 7941 Laser Printer is a non-impact plain paper printer for making hard copies of the microfilm images. The laser printer uses a semiconductor laser and dry electrographic development process.

Work Station

An ergonomically designed Work Station is part of the 7710 System. The 7710 Reader-Scanner is supported on a Work Station Base with a Machine Workshelf for the Keyboard. The Workstation Table is adjacent to the 7710 providing a work surface or support for the 7960 Controller. A pull-out shelf supports the Controller Keyboard. The 7941 Laser Printer and Laser Printer Caddy are positioned under the Workstation Table.

Options

Contact your 3M representative for more information regarding these system components:

210 CAT (Cartridge ANSI Transport)

The 210 CAT aids in the retrieval of microfilm images from 16 mm film contained in 3M style or ANSI style cartridges. The 210 CAT is a motorized transport capable of driving film forward or backward at varying speeds. Search for a particular image is assisted by an electronic odometer or 7756 Page Search. Film threading is automatic. Note: Your system may have a different film transport.

7756 Page Search

The 7756 Page Search is used with the 210 CAT to electronically locate document images on microfilm having blip encoding. A series of commands entered on the 7710 keyboard causes the 210 CAT to search film until the selected document is found and displayed on the Viewing Screen. An optional Asynchronous Protocol Interface can be installed with the 7756 Page Search to allow host computer control of the Page Search and Reader-Scanner.

System Introduction (continued)

API (Asynchronous Protocol Interface)

API allows a host computer to control operation of the 7710 Reader-Scanner System with a 7756 Page Search and 210 CAT. Application programs such as FileSaver, 3M Document Management System (DMS) and WorkManager can be used to create an index of document records analogous to a library's card catalog. This data base can be quickly reached to retrieve desired documents stored on microfilm. Common applications are: Accounts Payable Invoices, Personnel Records, Medical Records, Government Forms, Processed Checks, etc.

110 RFT (Roll Film Transport)

The 110 RFT aids in the retrieval of microfilm images from 16 mm and 35 mm roll film. The 110 RFT is a motorized transport capable of driving film forward or backward at varying speeds. Search for a particular image is assisted by a mechanical odometer. Film threading is manual, aided by a film clamp.

915, 916, 917, and 658 Fiche Handlers

The 915, 916, 917, and 658 Fiche Handlers are used to manually manipulate microfilm images.

- The 915 Single Fiche Handler accepts a standard size fiche (4 in. by 6 in.).
- The 916 Dual Fiche Handler accepts two standard size fiche (4 in. by 6 in.) side by side.
- The 917 Jumbo Fiche Handler accepts jumbo size fiche (5 in. by 8 in.) or 35 mm aperture cards.
- The 658 Single Fiche Handler with Roll Film Transport accepts a standard size fiche (4 in. by 6 in.) or 16 mm or 35 mm roll film.

Fiche Grid Index

Used with any of the Fiche Handlers, microfiche images can be more efficiently located by moving a Pointer on the film transport to a predetermined code on the Fiche Grid Index. The Fiche Grid Index may be one of several formats and is mounted on a movable steel plate having a magnetic strip to hold it in place during scanning. Magnification of the Reader-Scanner Zoom Lens must be adjusted to match the reduction stated on the Fiche Grid Index. Twelve grids having typical reductions and formats are available:

- | | |
|------------------------|------------------------|
| • 24X S. D. | • 42X FS-6, 25 Columns |
| • 24X S. D. (ANSI) | • 42X COM |
| • 24X S. D. (SEQ) | • 42X COM (ANSI) |
| • 24X FS-6, 12 Columns | • 48X |
| • 24X FS-6, 14 Columns | • 48X COM (ANSI) |
| • 32X FS-6, 20 Columns | • 48X S. D. (SEQ) |

Lens Lock

Used with any of the Fiche Handlers, a Lens Lock is available to prevent casual operators from removing the Reader-Scanner Zoom Lens.

FileSaver or DMS

Used with 210 CAT, 7756 Page Search, API, and a host computer, this software acts as an indexing system. It keeps track of document locations on microfilm. By requesting a certain document, the system will tell you on what cartridge, and at what position (frame) on that cartridge you can locate the document.

WorkManager

Used with 210 CAT, 7756 Page Search, API, and a host computer, this software is used where several people request copies of microfilmed documents. It arranges the requests in the order they are on the cartridges to eliminate the need to go back and forth between cartridges.

Environmental Conditions

The performance of the 7710 Reader-Scanner System can be affected by the environmental conditions encompassing its work area. Listed below are guidelines for placing the 7710 Reader-Scanner System for optimum performance:

- Place the 7710 Reader-Scanner System in a location that is not subject to direct sunlight or ultraviolet light, sudden changes in temperature or humidity, dust or drafts.
- The temperature should be controlled within a range of 60°F to 80°F (15.6°C to 26.7°C), the humidity controlled within a range of 20 to 60% RH, and the area well ventilated.

Important Safeguards

To reduce the possibility of personal injury or machine damage when using the 7710 Reader-Scanner System, comply with all of these safeguards before using the system:

- Plug the 7710 Reader-Scanner System power cords into three-conductor grounded (earthed) outlets only. Keep the cords away from hot surfaces and never ground the cords to a gas pipe, water pipe, or conduit. Avoid using extension cords. If you must use an extension cord, use only a three-conductor cord that is rated for at least 15 A. Cords having a lower rating may overheat and become a fire hazard.
- Do not operate the system if any part of it has been damaged or dropped, until the system has been checked out by a qualified service technician.
- Do not touch the hot Projection Lamp in the Reader-Scanner or the Fusing Assembly in the Laser Printer. Pay particular attention to the warning decals that identify these areas.
- Do not attempt to lift or move the Reader-Scanner or Laser Printer by yourself.
- Do not remove any covers from the Reader-Scanner or Laser Printer. Safety precautions and interlocks for the doors have been designed to prevent injury during routine maintenance.
- Do not try to repair any of the components of the 7710 Reader-Scanner System yourself. Call a qualified service technician for the necessary repair. Incorrect reassembly can cause electrical hazards or damage the system.
- Do not operate the Laser Printer without an Ozone Filter installed or with a damaged Ozone Filter. Ozone may be hazardous to your health. The filter should be replaced approximately every 10,000 prints by your Service Representative.



Notes on Image Processing in the 7710

The 3M 7710 Reader-Scanner System can simply function as a microfilm reader. But more importantly, it can scan and digitize the optical image displayed on the viewing screen for output to a laser printer, to remote facsimile locations, and/or to a high resolution graphics monitor. While performing these functions, the 7710 can dramatically improve the quality of images captured from poor microfilm images. It does this through the Microfilm Digital Image Improvement Processor (MDIIP), which incorporates both enhancement and threshold functions to:

- Improve image sharpness by dynamic image enhancement.
- Improve image contrast by use of adaptive thresholding.
- Duplicate selected image areas of photos using halftone reproduction.

Image Enhancement

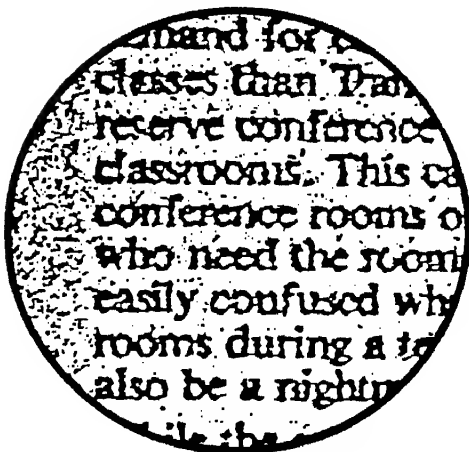
Image clarity is improved through the use of dynamic image enhancement. This is a 3M patented process which sharpens the edges of details to improve readability. With dynamic image enhancement, the sharpness of the image is selectively increased while backgrounding is simultaneously reduced.

Threshold

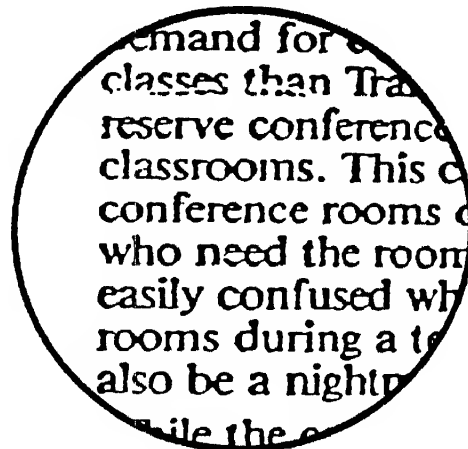
Thresholding is a process which determines whether a particular pixel should be black or white. The 3M patented thresholding process continuously adjusts thresholding throughout the page, rather than using a fixed threshold. The threshold for each pixel is a function of the background level in an area around each pixel in the image being scanned.

The examples below are samples of prints made from the same microfilm image. The one on the left was made on a typical reader-printer while that on the right was made on a 3M 7710. Compare the sharpness of the edges of the characters and the amount of background clutter. The comparison dramatically demonstrates that the 3M enhancement and thresholding processes result in a more readable document.

Typical Reader-Printer



3M 7710



Less Background + sharpened edges = Improved Contrast

Photo Mode

The printing industry commonly uses optical halftone filters when printing photographs. The 3M 7710 uses digital filters to achieve the same result. The normal threshold function, described in the preceding paragraph, is replaced by the photo mode function only in the area selected by the operator. The operator can apply the photo mode function to all or any part of the image, using the X and Y coordinates from the grid on the viewing screen.

The general effect of the filters is that some pixel locations will be frequently printed while others will seldom be printed. In other words, dots will be printed in some locations which would ordinarily not include them, and dots will be absent from some locations that ordinarily would have them. The result is a more visually pleasing halftone print having a photo-like appearance.

Normal Threshold

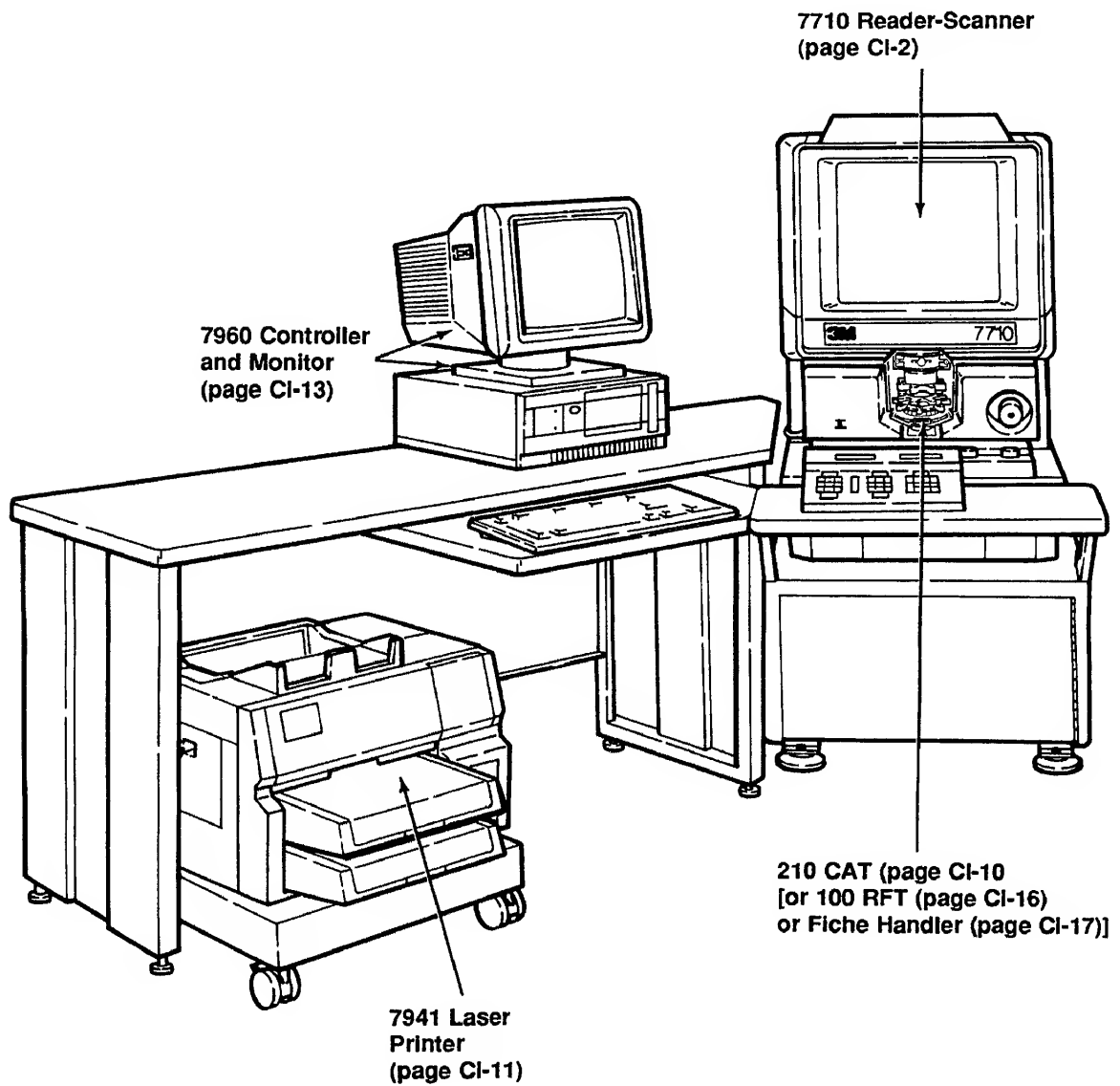


Photo Mode

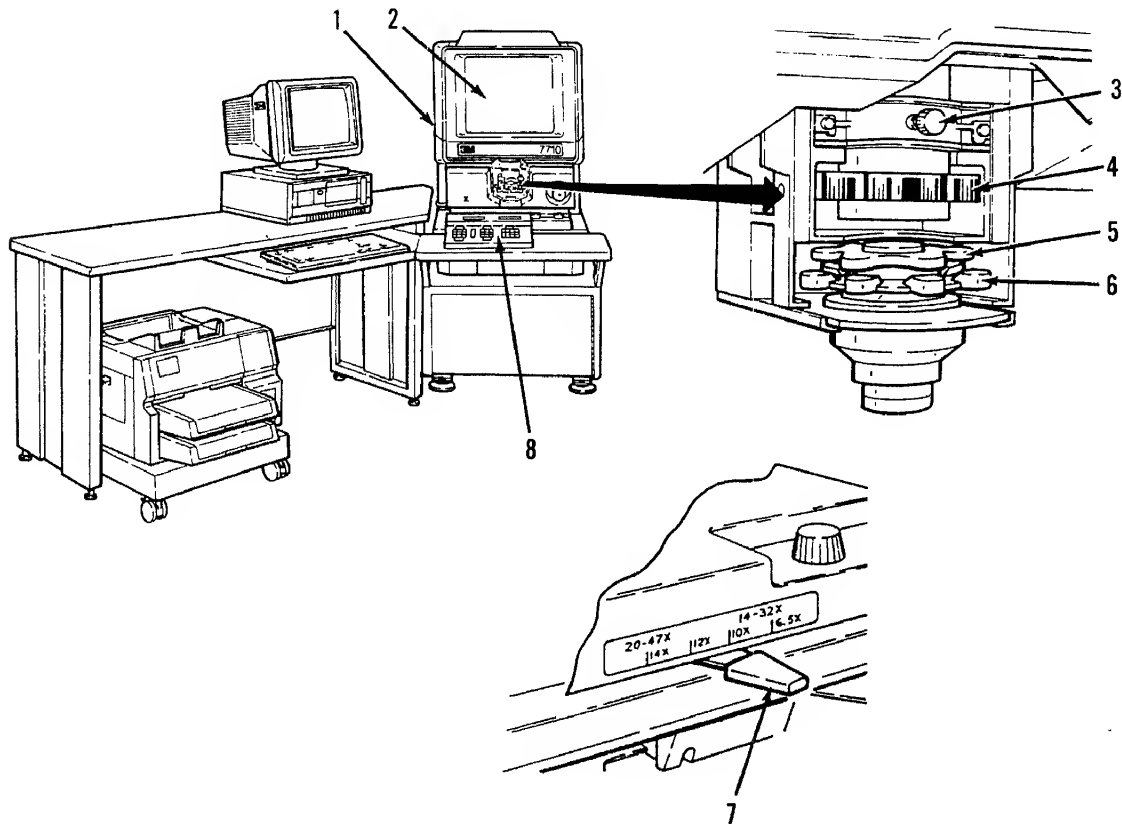


Table Of Contents

7710 Reader-Scanner	CI-2
7756 Page Search	CI-8
210 CAT (Cartridge ANSI Transport)	CI-10
7941 Laser Printer	CI-11
7960 Controller and Monitor	CI-13
110 RFT (Roll Film Transport)	CI-16
Fiche Handlers	CI-17



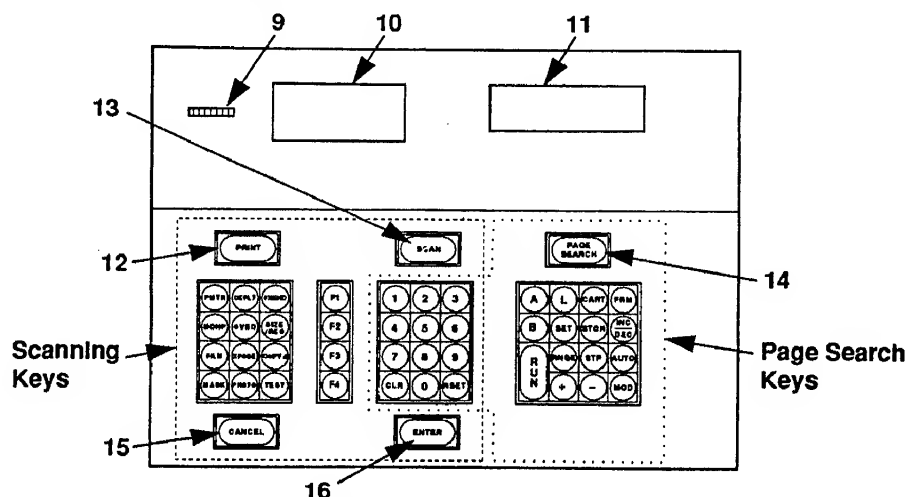
7710 Reader-Scanner



- 1 **POWER SWITCH** - Applies or removes electrical power to the 7710 Reader-Scanner and 210 CAT or 110 RFT.
- 2 **VIEWING SCREEN** - Displays an enlarged microfilm image for viewing.
- 3 **PRISM RELEASE** - Releases the Prism Assembly to match the magnification range of the Zoom Lens Assembly.
- 4 **IMAGE ROTATION WHEEL** - Rotates the image displayed on the Viewing Screen.
- 5 **ZOOM WHEEL** - Adjusts the magnification of the Zoom Lens Assembly.
- 6 **FOCUS WHEEL** - Adjusts the image on the Viewing Screen for the sharpest focus.
- 7 **FRESNEL LENS ADJUSTMENT HANDLE** - Adjusts light distribution when used in conjunction with 6.5X to 14X or 12X to 24X Zoom Lens.
- 8 **KEYBOARD** - Controls the Reader-Scanner. See pages CI-3 through CI-7 for a description of the Scanning Keys and their functions. See pages CI-8 and CI-9 for a description of the Page Search Keys and their functions.

7710 Reader-Scanner (continued)

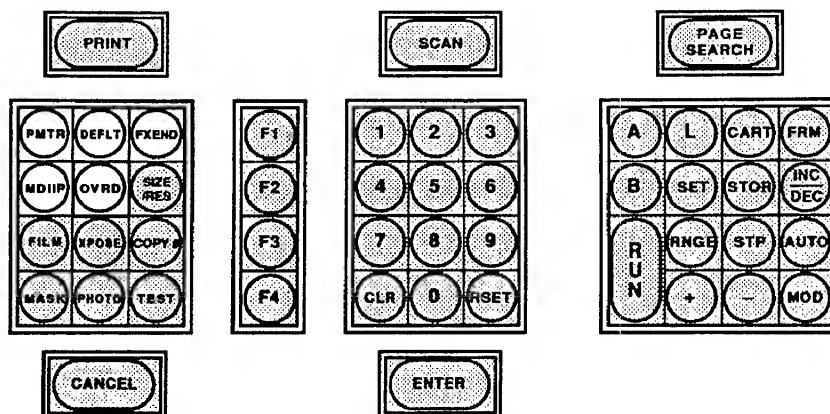
The Scanning Keys control the Reader-Scanner output. The Page Search Keys are active only when a 7756 Page Search is installed. Some of the Scanning Keys are active only when the Reader-Scanner is "Ready". The Reader-Scanner is "ready" when all self tests have been successfully completed and a ready message has been displayed on the Scanner Display.



- 9 **CONTRAST CONTROL** - Adjusts the contrast of the Scanner Display and Page Search Display.
- 10 **SCANNER DISPLAY** - Displays parameter setup menus, parameter settings, and system messages.
- 11 **PAGE SEARCH DISPLAY** - Active only when a 7756 Page Search is installed. Displays page search information such as document frame numbers, messages, and codes.
- 12 **PRINT KEY** - Scans and digitizes the image displayed on the Viewing Screen for transfer to the 7960 Controller for printing by the 7941 Laser Printer. Prints can be made for hardcopy or for previewing an electronic document transfer before FAXing to a remote location. Positive prints are made from positive or negative film by setting the **FILM** Key to the correct mode.
- 13 **SCAN KEY** - Scans and digitizes the image displayed on the Viewing Screen for transfer to the 7960 Controller for FAXing to a remote facsimile location.
- 14 **PAGE SEARCH KEY** - Used only when a 7756 Page Search is installed. Toggles the Cursor on the Scanner Display. An underlined Cursor indicates the system is in the Scanning Mode. A block Cursor indicates the system is in the Page Search Mode. Use with Batch and Range Scanning when a Host Computer is installed. See 7756 Page Search (Option), page CI-8, for a brief description of the Page Search Keys and tabbed section "PAGE SEARCH" for detailed description and use.
- 15 **CANCEL KEY** - Cancels any printing or scanning operation in progress. If there are no active operations but there is a full image buffer, the **CANCEL** Key initiates a menu asking for cancel confirmation. In the set-up menus, it reverts the menu to the previous menu.
- 16 **ENTER KEY** - Switches on the Projection Lamp to illuminate the Viewing Screen when the Reader-Scanner has been inactive for more than five minutes. Ends a parameter entry sequence and clears the Scanner Display. Active only when a set-up menu is displayed on the Scanner Display.

7710 Reader-Scanner (continued)

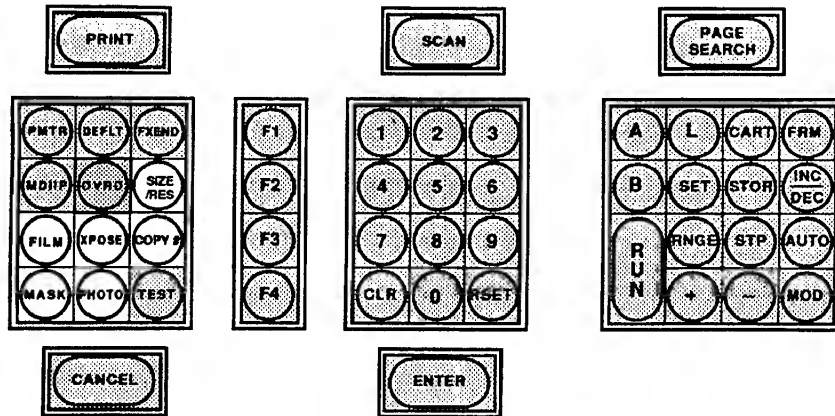
Scanning Keys



- PMTR (Parameter)** Displays the current scan parameter settings: gain (1 through 8) and threshold (1 through 8), exposure (auto or manual), copy number (1 to 9), masking (off, manual, automatic, or special), and photo (on or off). To change a parameter setting, press the key for that parameter (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, **PHOTO**), and enter the new setting. To display the ready message without changing the setting, press **ENTER** or **CANCEL**.
- DEFLT (Default)** Sets power on default parameter settings. To change a default parameter setting for threshold and gain, size, resolution, film polarity, exposure, number of prints, mask option, or photo option, press **DEFLT** and the key for the desired parameter (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, **PHOTO**), and enter the new setting.
- FXEND (FAX end)** Used only when a 7960 Controller is installed. Used to tell the Controller that the final FAX document transfer is complete. Equivalent to the **Esc** key on the Controller.
- MDIIP (Microfilm Digital Image Improvement Process)** Selects one of 64 combinations of gain and threshold levels to apply to the image data during the scanning process. Increasing the threshold level lightens the image. The initial threshold default setting is 4. Increasing the gain level sharpens the image, but increases the background. The initial gain default setting is 4. See tabbed section "READER-SCANNER", Changing the Threshold and Gain, page RS-6, for how to determine the correct settings for your image.
- OVRD (Override)** Changes a parameter setting for more than one scan cycle. To change a parameter setting for threshold and gain, size, resolution, film polarity, exposure, number of prints, mask option, or photo option, press the **OVRD** Key and the key for the desired parameter (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, **PHOTO**) and enter the new setting.

7710 Reader-Scanner (continued)

Scanning Keys

**SIZE/RES**

Sets the print size and image resolution. The print size set for the 7710 should match the print size set for the Laser Printer. Print size can be Letter (8-1/2 in. x 11 in.) or European A4 (210 mm by 297 mm). Image resolution for both printing or FAXing can be set to 200 dpi or 300 dpi (dots per inch). An increase in dots per inch improves the resolution but increases the time for scanning and transferring an image. Print size and image resolution may be set for no option. If this is the case, the parameters will be displayed but no changes are allowed.

FILM

Sets the proper exposure range when scanning positive or negative microfilm for positive prints or positive FAXed copies.

XPOSE

Selects the automatic or manual mode for controlling the intensity of the Projection Lamp. In both modes, selects one of four exposure values (1 is the lowest exposure, 4 is the highest).

COPY#

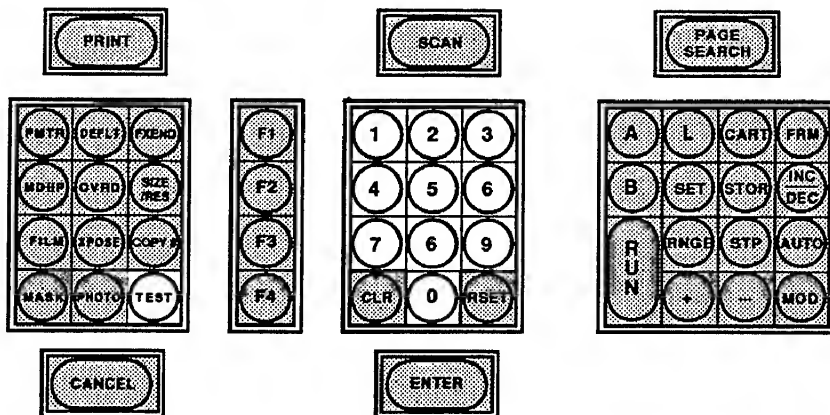
Selects the number of prints to be made on the local printer. The initial default value is 1. The maximum value is 9.

MASK

Selects one of four mask options (no mask, manual, automatic, or special) to scan an image area that is smaller than the full screen. In the Manual Mode, defines the starting and ending x and y coordinates (in tenths of an inch) of the image area to be scanned. The initial default settings are X1 = 0, X2 = 80, Y1 = 0, and Y2 = 105 (International Y2 = 117). In the automatic mode, you can select "single" if only a complete document is displayed on the Viewing Screen. Or you can select "multi" if partial documents are displayed as well as a complete document. The Automatic Mode masks the undesired dark border common with microfilm prints. The Special Mask Mode masks the area surrounding an image while allowing an additional block of text at the top or left of the document.

PHOTO

Selects the photo option to convert a photograph in the microfilmed image area to a halftone. Defines the starting and ending x and y coordinates (in tenths of an inch) of the photograph. The initial default settings are X1 = 0, X2 = 80, Y1 = 0, and Y2 = 105. (International Y2 = 117).

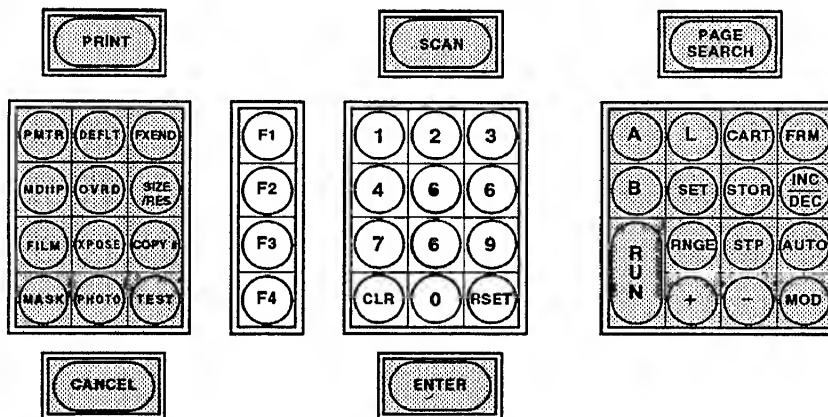
7710 Reader-Scanner (continued)**Scanning Keys****TEST**

Used with the following Numeric Keys:

- 1 Used with Function Keys F1, F2, and F3 to store 7710 macro parameters. The F1 key is reserved for masking parameters. The F2 and F3 keys are for all other 7710 parameters. Each Function Key supports up to nine macro parameters.
- 2 (Step Test 2X) - Processes approximately 4 square inches of the upper left corner of the scanned image with 16 combinations of threshold and gain values and prints a 4 x 4 grid of images on the laser printer. The test is used to select the optimum threshold and gain levels for marginal quality film.
- 3 (Version) - Displays the firmware version level and the current 7710 mode. The mode should read "Reader/Scanner" Mode if an 7960 Controller is installed, otherwise "Reader/Printer".
- 4 (Test Pattern) - The test pattern function causes an internally generated test pattern to be sent to the scanned image destination. In Printer Mode, the scanned image will be printed on the local 7941 Printer. In Scanner Mode, the scanned image will be FAXed to a remote location.
- 5 (Key Operator) - Used to change operator accessible system parameters and diagnostics.
- 6 (Service Technician) - Used by the Service Technician to change system format tables and configuration parameters.
- 7 (Reset 7710) - Resets the 7710 without having to switch off electrical power to the 7710 and then on again. (The 7710 will run its self-diagnostic sequence - less than 30 seconds.)
- 8 (Scan Count) - Used to determine the number of scanning operations the 7710 has completed.
- 9 (Page Search Auto Mode) - Used to switch from Scan Mode to Print Mode, or Print Mode to Scan Mode.

7710 Reader-Scanner (continued)

Scanning Keys

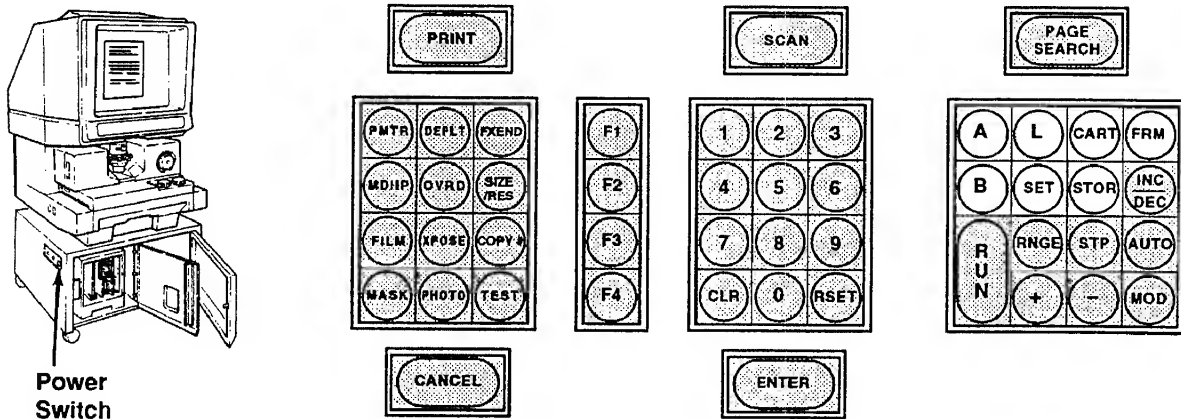


- F1** Used with the **TEST** Key to store up to 9 masking macro parameters.
- F2** Used with the **TEST** Key to store up to 9 macro parameters other than masking.
- F3** Used with the **TEST** Key to store up to 9 additional macro parameters other than masking.
- F4** Reserved for future use.
- 0 through 9** Used to enter numeric values. Also used to store and retrieve macro parameters.
- CLR** Clears an entered numeric setting from the display at the cursor location.
- RSET** Resets a parameter to the default setting. To reset a parameter setting for threshold and gain, size, resolution, film polarity, exposure, number of prints, mask option, or photo option, press **RSET** and the key (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, or **PHOTO**) for that parameter. Press **RESET** and **DEFLT** to reset all parameters simultaneously.

7756 Page Search (OPTION)

The 7756 Page Search Keyboard is part of the 7710 Reader-Scanner Keyboard. These keys are active only when a 7756 Page Search is installed and when in the page search mode. Pressing a Page Search Key while in a setup menu will cause a blinking block cursor to be displayed on the Scanner Display.

The following Page Search Keys are combined in various sequences to perform various page search operations. The definitions given on this page are basic translations of the key functions. For a complete description of all the page search functions and key combinations, see tabbed section "PAGE SEARCH", pages PS-10 through PS-27.



Power Switch

Applies or removes electrical power to the 7756 Page Search.

A

Serves as a field delimiter between Block, Batch, and Item numbers in multi blip document entries.

L

Redefines the function of other key functions. Defines a diagnostic code or operator command when used with other key functions.

CART (Cartridge)

Displays the location of the next cartridge number stored in the memory registers and the cartridge number.

FRM (Frame)

Display the location of the next number stored in the memory registers, the number of scans to transfer, and the contents of the memory registers.

B

No specific function by itself. Redefines the functions of other keys.

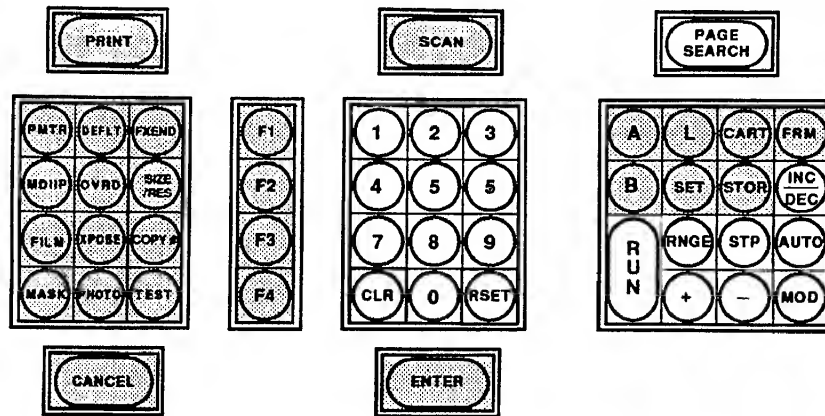
SET

No specific function by itself. Used with other keys to "set" various values.

STOR (Store)

Store frame or cartridge numbers in the memory registers.

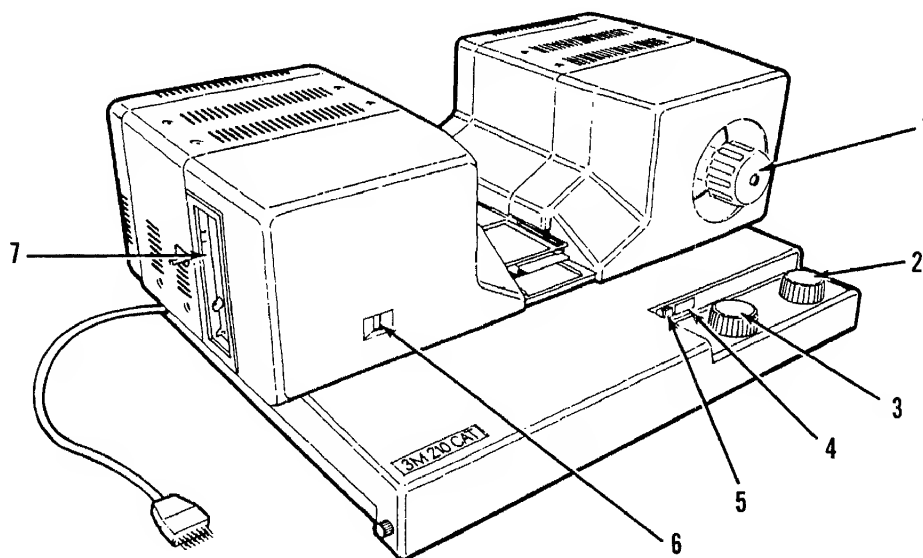
7756 Page Search (OPTION) (continued)



0 - 9	Used to enter numeric values.
CLR	Stops a machine function or clears the display.
RSET	Used with L to reset the Communications Receiver, numeric keys to change a value displayed, and with STOR to change the Memory Register.
INC/DEC (Increment/Decrement)	Increments or decrements memory location, displays the memory register number and the number of scans requested.
RUN	With a preceding document number entry, initiates search to the specified document. With no preceding document number, rewinds film.
RNGE (Range)	Sets a range into the page search.
STP (Step)	Steps frame to frame. Also used to re-define the functions of other keys.
AUTO (Automatic)	Automatic scanning function for printing and FAXing.
+	Search forward one frame.
-	Search backward one frame.
MOD (Mode)	Display or change the current page search mode. Also used to redefine other key functions.
PAGE SEARCH	Used to select Batch Printing or Scanning.

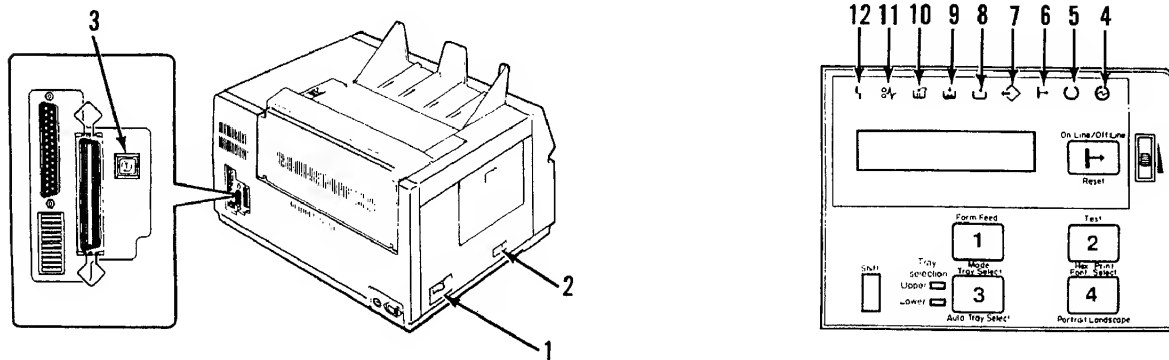
210 CAT (Cartridge ANSI Transport)

Note: The 210 CAT (Cartridge ANSI Transport) is an optional system component. Your system may include instead the 110 RFT (Roll Film Transport), see tabbed section "FILM TRANSPORT (Roll)"; or a Fiche Handler, see tabbed section "FILM TRANSPORTS (Fiche)".



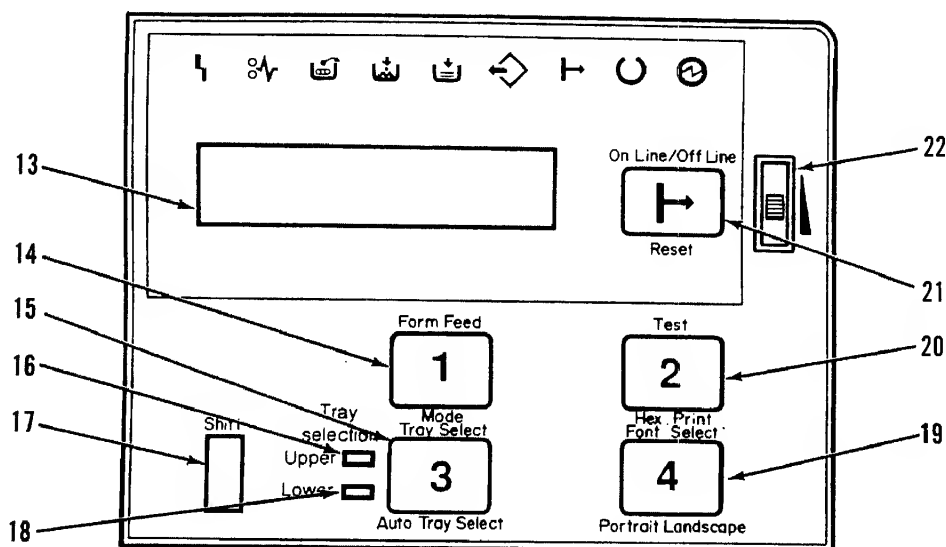
- 1 **MANUAL FILM SCAN CONTROL** - Manually moves film forward or backward.
- 2 **FILM SPEED CONTROL** - Electrically moves film forward or backward at variable speeds.
- 3 **FILM TRAVERSE CONTROL** - Moves the image vertically on the Viewing Screen.
- 4 **FILM ODOMETER/ERROR CODE DISPLAY** - Serves as a reference for locating microfilm images or troubleshooting.
- 5 **FILM ODOMETER RESET** - Resets Film Odometer reference to 0000.
- 6 **CARTRIDGE INDICATOR** - Used to indicate a loaded cartridge.
- 7 **CARTRIDGE RELEASE LEVER** - Used to manually eject a jammed cartridge.

7941 Laser Printer



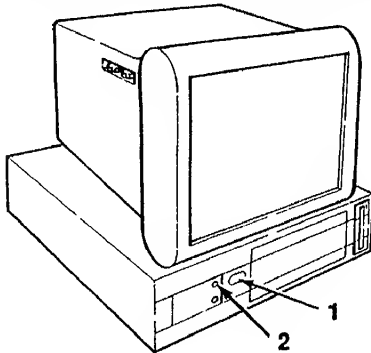
- 1 **Power Switch** - Applies or removes power to the 7941 Laser Printer.
- 2 **Page Counter** - Records the number of prints made to date.
- 3 **Test Switch** - Prints a test pattern of horizontal lines. The 7960 Controller Power Switch must be in the "1" (ON) position and the laser printer On-Line Switch pressed to Off-Line.
- 4 **Power Indicator** - Off when the laser printer is warming up or receiving data. Lights when power has been applied to the laser printer.
- 5 **Ready Indicator** - Lights when the Laser Printer is ready to make prints.
- 6 **On-Line/Off-Line Indicator** - Lights when the laser printer is on-line with the 7960 Controller. Off when off-line.
- 7 **Data-In-Buffer Indicator** - Lights when data is present in the controller's memory. Flashes when data is being transferred to memory.
- 8 **Paper Supply Indicator** - Flashes when both the Upper Paper Tray and Lower Paper Tray are empty.
- 9 **Toner Supply Indicator** - Flashes when the Toner Cartridge and Cleaning Pad should be replaced.
- 10 **Operator Maintenance indicator** - Flashes when the OPC Cartridge needs to be replaced (after approximately 25,000 prints). The Charge Corona, Transfer Corona, and Shield Lens also need to be replaced, and the Cleaning Lamp needs to be cleaned.
- 11 **Paper Jam Indicator** - Flashes when paper is jammed in the paper path. The location of the jam is shown on the Message Display.
- 12 **Error Indicator** - Flashes when an error occurs. Refer to the Message Display for a specific error message. See "TROUBLESHOOTING" for an explanation of the error message.

7941 Laser Printer (continued)

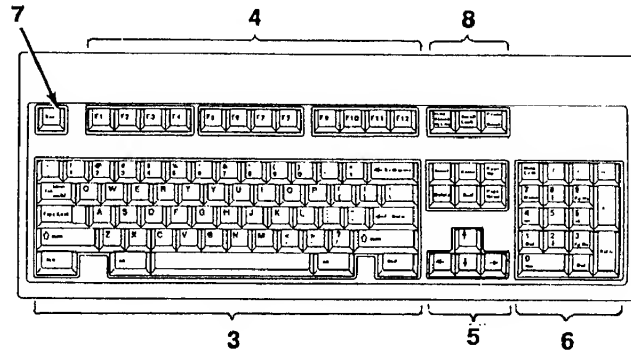


- 13 **Message Display** - One-line, 16-character LCD (liquid crystal display) message display that normally displays "LJII". If an error occurs, it briefly defines machine conditions specified by the lit indicator lights above the Message Display.
- 14 **Form Feed/Mode Key** - When pressed, any remaining data in the printer's memory is printed.
- 15 **Tray Select/Automatic Tray Select Key** - When the printer is Off-Line, toggles the paper tray from the tray indicated to the other tray. When pressed with the **Shift** key, arms the printer to automatically switch from an empty paper tray to the other.
- 16 **Upper Paper Tray Select Indicator** - When lit, indicates the Upper Tray is active. When both the Upper Paper Tray Select Indicator and the Lower Paper Tray Select Indicator are lit, the printer will automatically shift from the empty paper tray to the other.
- 17 **Shift Key** - When pressed with the **On-Line/Off-Line/Reset** Key, resets the laser printer. When pressed with the **Tray Select** Key and the printer is off-line, arms the printer to automatically switch from one empty paper tray to the other.
- 18 **Lower Paper Tray Select Indicator** - When lit, indicates the Lower Paper Tray is active. When both the Upper Paper Tray Select Indicator and the Lower Paper Tray Select Indicator are lit, the printer will automatically shift from the empty paper tray to the other.
- 19 **Font Select/Portrait/Landscape Mode Select Key** - Not used.
- 20 **Test Key** - Prints a 3-page status report.
- 21 **On-Line/Off Line Key** - Pressed to switch the laser printer on-line or off-line with the 7960 Controller.
- 22 **Brightness Control** - Adjusts the brightness of the display panel.

7960 Controller and Monitor



Controller

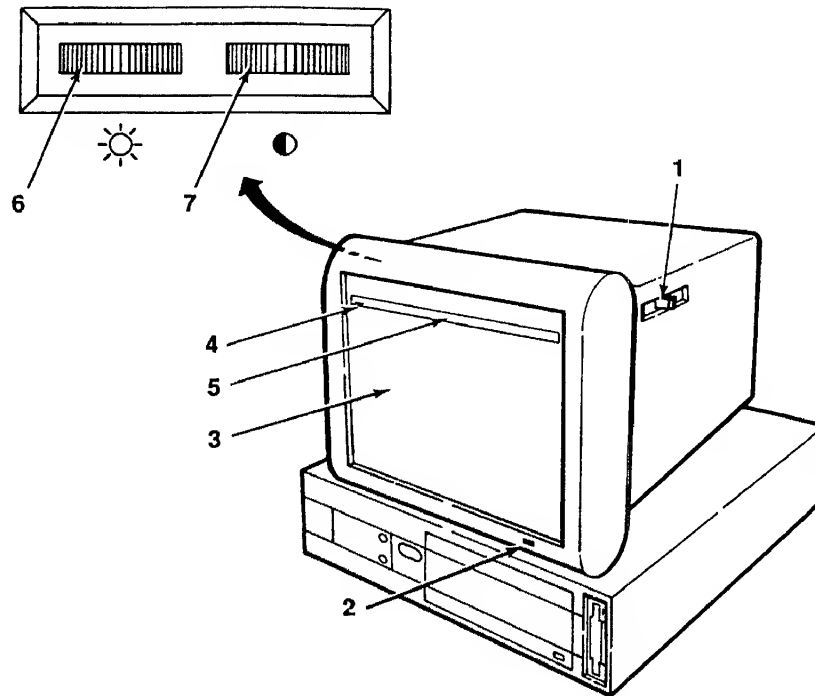
**Note**

The function of the Controller Keys described is when the Controller is in the MMMFAX Program. When the Controller is in DOS, the function of the keys change accordingly.

- 1 **POWER SWITCH** - Applies or removes electrical power to the 7960 Controller.
- 2 **POWER INDICATOR** - Indicates electrical power has been applied.
- 3 **TYPEWRITER KEYS** - Are similar to those of a standard typewriter except **Tab**, **Enter**, **Ctrl** and **Alt**. The functions of these keys vary with each menu. See tabbed section "FAX CONTROLLER" for the function of these keys. Most of the Typewriter Keys are typematic. A key will repeat as long as it is held down or until it reaches a field limit.
- 4 **FUNCTION KEYS** - Vary in function with each menu displayed. See tabbed section "FAX CONTROLLER" for the function of these keys. Twelve Function Keys are available. Only ten are used. F11 and F12 are reserved for future use.
- 5 **CURSOR/HIGHLIGHT CONTROL KEYS** - Vary in function with each menu displayed. See tabbed section "FAX CONTROLLER" for the function of these keys. These keys will either move the cursor or highlight a record. The **Delete** Key is not used.
- 6 **NUMERIC KEYS** - Are used to enter numeric information into a record. Pressing the **Num Lock** Key one time switches the Cursor Keys to number keys. While in the Num Lock Mode, the **Shift** Key must be held down to use **Home**, **End**, **Pg Up**, **Pg Dn**, **↑**, **↓**, **→**, and **←** keys. Pressing **Num Lock** again returns keys 0 through 9 to cursor control. The **-** and ***** keys are always active while the **Ins**, **+**, and **/** keys are not used. The **Enter** Key functions the same as a typewriter **Enter** Key.
- 7 **Esc** - Is used to exit. The exit function varies with each menu. Same as **FXEND** on the 7710 Scanner Keyboard.
- 8 **Other unused keys** - Have no function in the MMMFAX Program. These keys are **Print Scrn**, **Scroll Lock**, and **Pause**.

Note

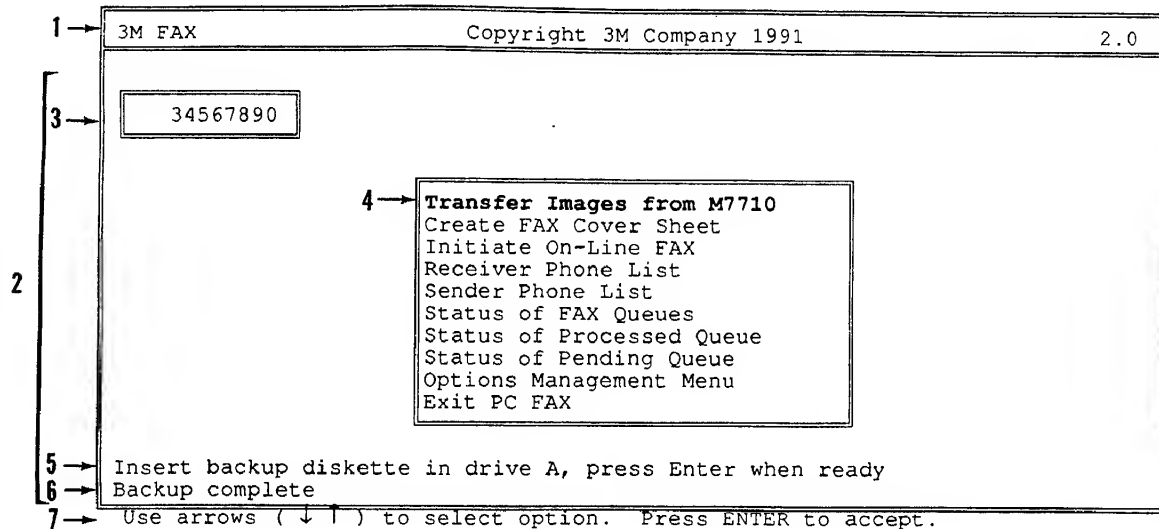
The keyboard can be adjusted to one of two positions for typing comfort. To adjust, turn your keyboard over and pull out both Keyboard Supports to raise or push in to lower.

7960 Controller and Monitor (continued)**Monitor****Note**

The menu fields and records in the MMMFAX Program are "circular". Pressing ↓, **Enter**, or **Tab** in the last field or record will move the Cursor back to the first field or Highlight the first record of the next screen, or Highlight the first record of the first screen. Pressing ↑ works similarly but in reverse.

- 1 **POWER SWITCH** - Applies or removes electrical power to the 7960 Monitor.
- 2 **POWER INDICATOR** - Indicates electrical power has been applied.
- 3 **CONTROLLER DISPLAY** - Displays the MMMFAX Program Menus and echoes your key commands.
- 4 **CURSOR** - Marks the current position on the Controller Display with a blinking underline if the Highlight is not active.
- 5 **HIGHLIGHT** - Marks the current position on the Controller Display in reverse video if the Cursor is not active.
- 6 **BRIGHTNESS CONTROL** - Adjusts the brightness of the Controller Display.
- 7 **CONTRAST CONTROL** - Adjusts the contrast between the characters and background of the Controller Display. Adjusted to its lowest level, the characters blend with the background making them difficult to see.

7960 Controller and Monitor (continued)

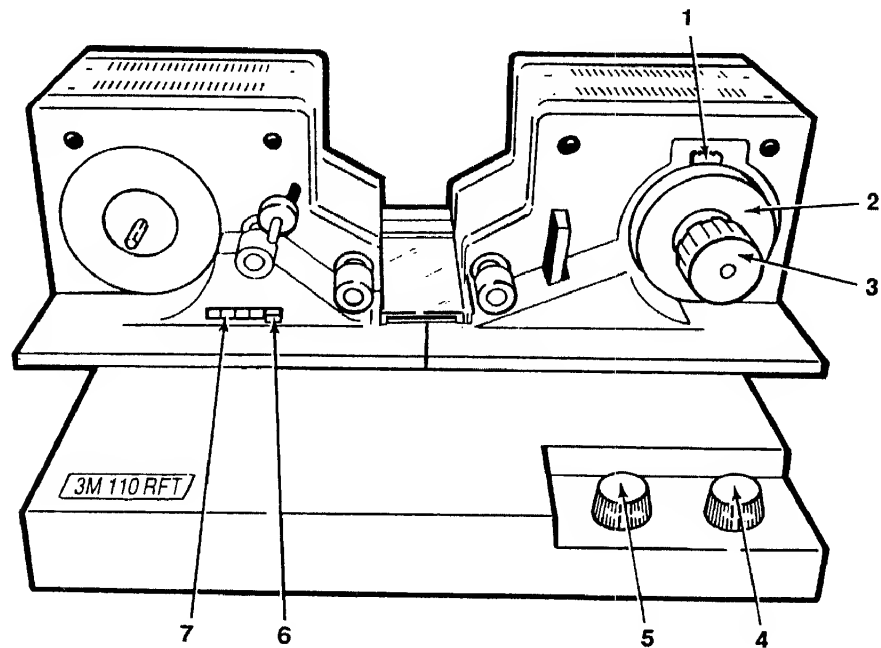


- 1 **BANNER LINE** - Gives an indication of the type of screen or menu currently displayed. Also gives the software version number and a copyright note.
- 2 **MAIN MENU OR OTHER DISPLAY** - Displays the Main Menu, 3M FAX display, subject paragraph, Receiver List, Sender List, cover sheet, menu or list selected.
- 3 **FREE BYTES** - Shows the number of free bytes remaining on the hard disk. This number is updated each time the Main Menu is displayed. Delete unused records when bytes remaining reach approximately 5,000,000.
- 4 **HIGHLIGHT** - Reverse video indicates active option.
- 5 **INSTRUCTION LINE** - Gives instructions whenever an action is needed.
- 6 **STATUS LINE** - Shows error and status messages.
- 7 **KEY DEFINITIONS** - Provides a brief description of the keys and their functions for the current display.

Note

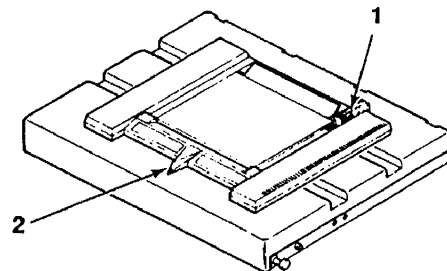
The MMMFAX Program uses reverse video or a cursor to indicate the active menu option in a list of possible entries. The Main Menu is "circular", that is, pressing ↓, or **Home** from the last option will cause the first option to be active, and pressing ↑ or **End** from the first option will cause the last option to be active. The Main Menu will always be displayed after completion of a chosen option. The Main Menu is both the entry and exit point for the MMMFAX Program.

Other screens are also circular. Pressing ↓, **Enter**, or **Tab** from the Subject Field or Date Field of the Cover Sheet will move the cursor to the Receiver Field, and pressing ↑ from the Receiver Field will move the cursor to the Date Field. Pressing ↓, **Enter**, or **Tab** from the Phone Number Field of the Receiver List or Sender List will move the cursor to the Name Field, and pressing ↑ from the Name Field will move the cursor to the Phone Number Field.

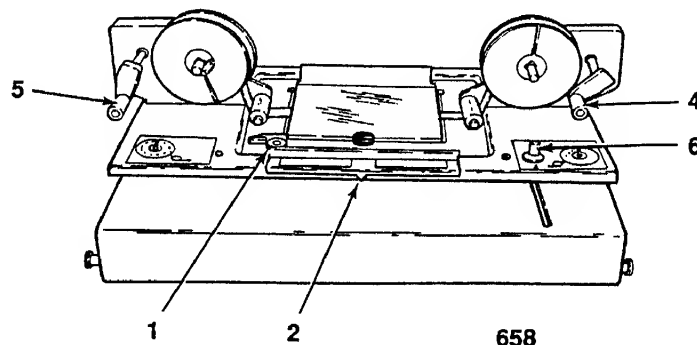
110 RFT (Roll Film Transport)

- 1 **FILM CLAMP** - Holds film on the Film Take-Up Reel during loading.
- 2 **FILM TAKE-UP DISC** - Supports 16 or 35 mm film.
- 3 **MANUAL FILM SCAN CONTROL** - Manually moves film forward or reverse.
- 4 **FILM SPEED CONTROL** - Drives film forward or reverse at variable speeds.
- 5 **FILM TRAVERSE CONTROL** - Moves the image vertically on the Viewing Screen.
- 6 **FILM ODOMETER RESET** - Resets the Film Odometer reference to 0000.
- 7 **FILM ODOMETER** - Serves as a reference for locating microfilm images.

Fiche Handlers



**915
Shown**



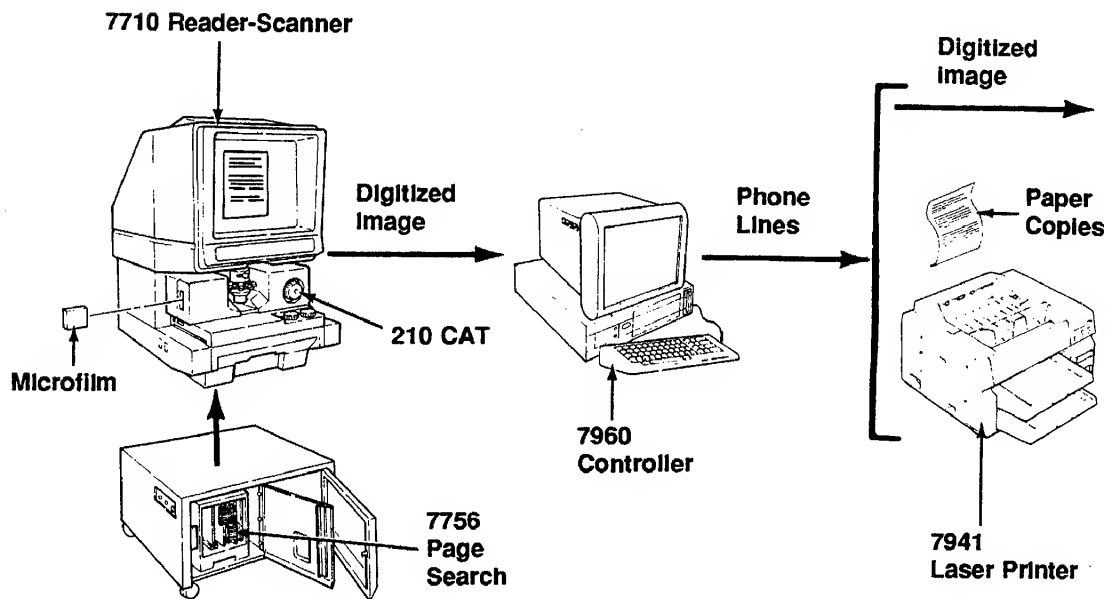
658

- 1 GLASS FLAT RELEASE LEVER** - Prevents the Lower Glass Flat from falling out.
- 2 POINTER** - Aids locating a microfilm image by pointing to a known reference on an optional Fiche Grid Index.
- 3 FICHE GRID INDEX** - **OPTIONAL** (not shown) Used with the Pointer to quickly locate indexed microfilm images. The magnification of the Zoom Lens and reduction of the microfilm must match to be of value.
- 4 FILM ADVANCE HANDLE*** - Manually drives 16 or 35 mm roll film forward.
- 5 FILM REVERSE HANDLE*** - Manually drives 16 or 35 mm roll film backward.
- 6 LATERAL LOCK*** - Prevents side-to-side movement of the transport when viewing 16 or 35 mm roll film.
- 7 FILM TRANSPORT** - Moves the image vertically or horizontally on the Viewing Screen.

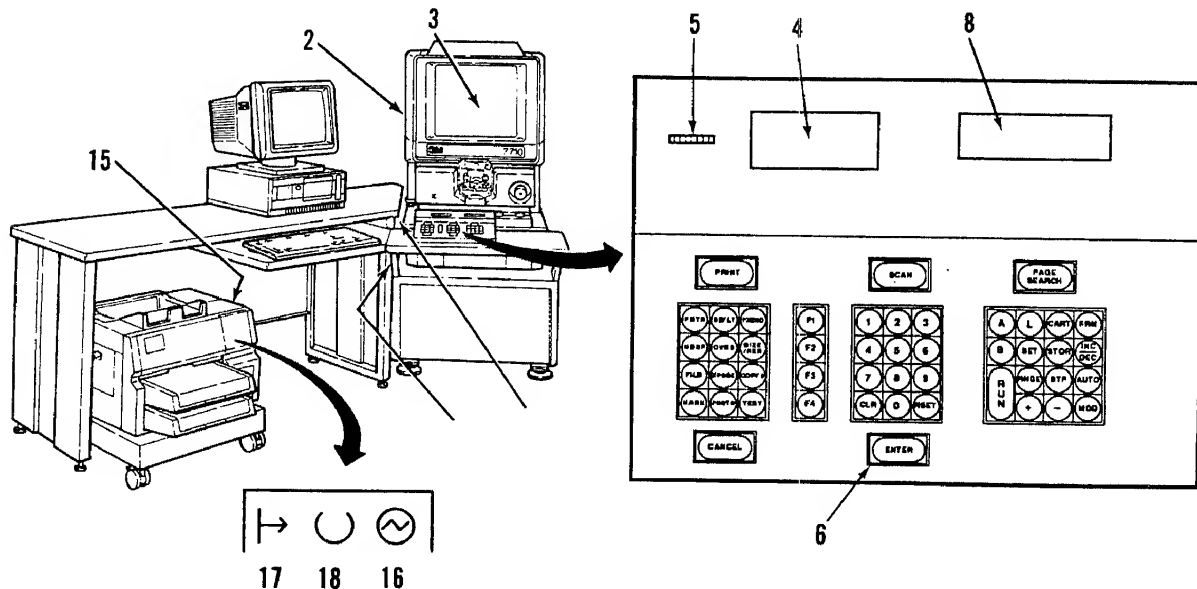
* 658 only

Table Of Contents

Starting Up the System	OS-2
Loading a Film Cartridge	OS-4
Adjusting the Viewed Image	OS-5
Locating a Desired Image	OS-6
Setting the Reader-Scanner Operating Parameters	OS-7
Making a Print	OS-9
FAXing a Document Image Package	OS-11
Using a Host Computer to Retrieve and Print or FAX Images	OS-14
Shutting Down the System	OS-16



Starting up the System

**Note**

If a Power Strip is used to control your Workstation, switch the Power Switches for all machines to their ON position once, and simply switch the Power Switch (1) for the Power Strip ON.

1. Press the 7710 Power Switch (2) to the "1" (ON) position. The Projection Lamp will light up the Viewing Screen (3) and the 7710 will run a diagnostic sequence. The Scanner Display (4) will display the message "Ready". If the Scanner Display displays another message, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-3. If the display is too light, turn the Contrast Control (5) to the right. If the background begins to appear, turn the Contrast Control to the left.

Note

The Projection Lamp for the Viewing Screen (3) of the 7710 will automatically switch off after 5 minutes of inactivity. Press the ENTER Key (6) on the 7710 Scanner Keyboard to again light the Viewing Screen.

2. If your system includes a 7756 Page Search, press the Page Search Power Switch (7) to the "1" (ON) position. Following the message "INITIALIZING" on the Page Search Display (8), the current document number will display. (If no film is loaded, the number(s) will be zero.)

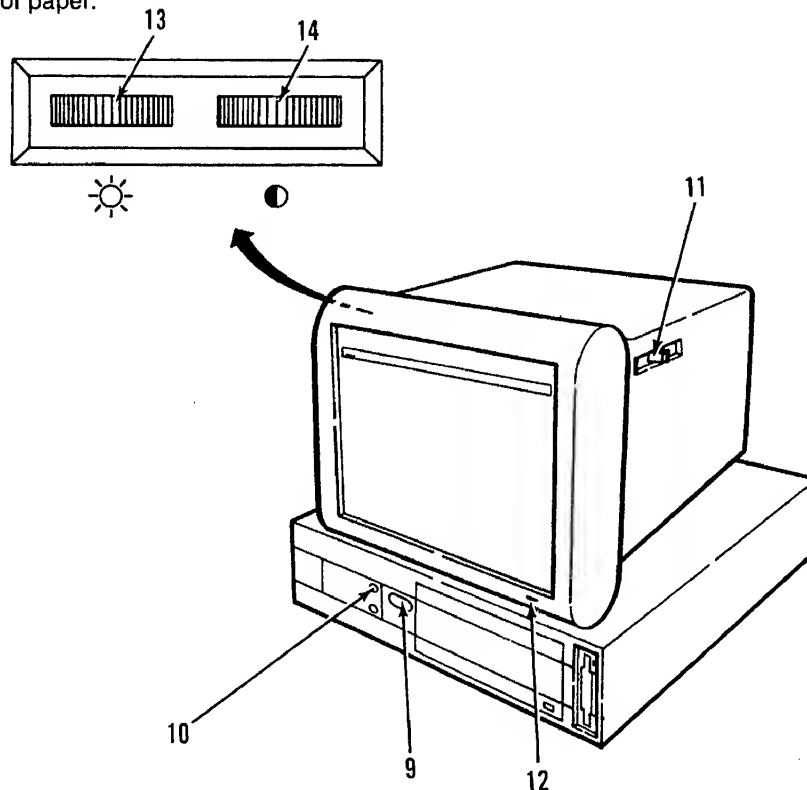
Starting Up the System (continued)

3. Press the Power Switch (9) for the Controller to the "1" (ON) position. The Power Indicator (10) will light.
4. Pull the Power Switch (11) for the Monitor to the "1" (ON) position. The Power Indicator (12) will light. After the startup program has executed, the Main Menu will display on the Monitor.

Note

If the Controller Display is dark or washed out, adjust the Brightness (13) and Contrast (14) controls.

5. Press the Power Switch (15) for the 7941 Laser Printer to the "1" (ON) position. The Power Indicator (16) lights and the Ready Indicator (18) on the Laser Printer Control Panel flashes. After approximately 1-1/2 minutes, the Ready Indicator remains on. The On-Line/Off-Line Indicator and Upper Paper Tray Indicator light. If the Ready Indicator does not remain on or other indicators display, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-6.
6. To arm the printer to automatically switch from an empty Paper Tray to the next Paper tray first press the On-Line/Off-line Switch to Off-Line (the On-Line/Off-Line Indicator Light goes out). Then press **Shift** and **Tray Select**. (This command must be done each time the printer is switched on. Otherwise, load the selected paper tray, and press **On-Line/Off-Line** and, **Tray Select**, to switch trays each time a Paper Tray runs out of paper.

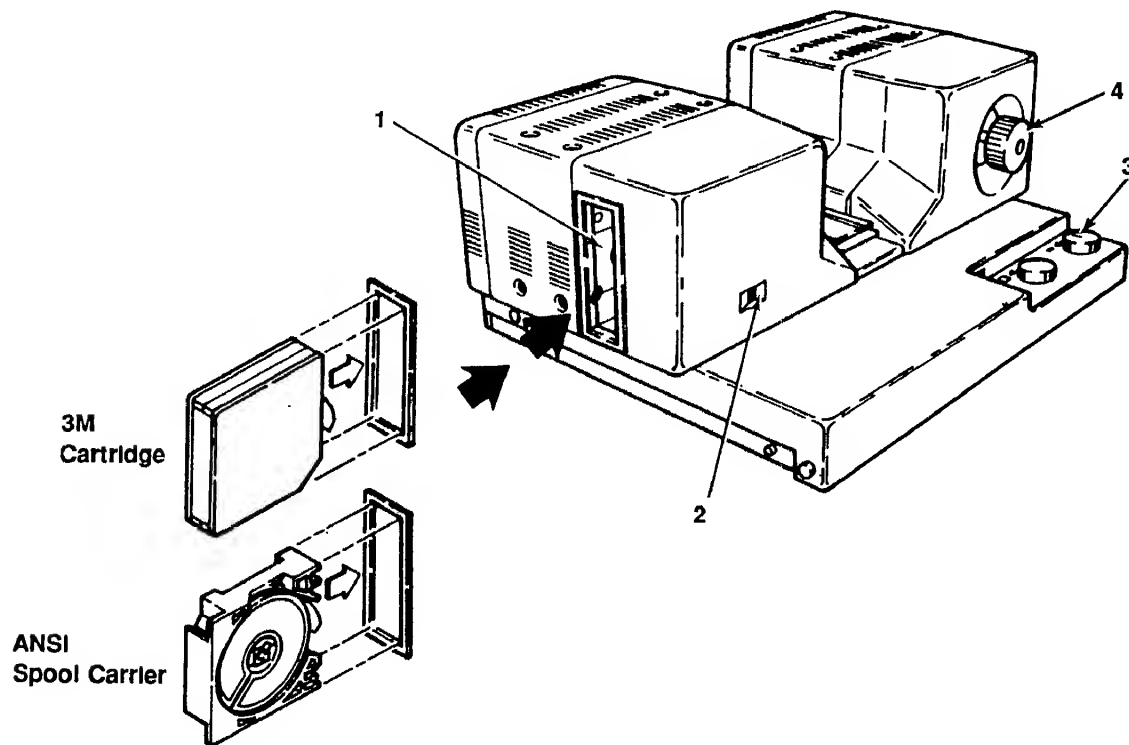


Note

Appearance at any time of the prompt "C:\MMMFAX>" indicates that the system has exited the MMMFAX program and entered the DOS (Disk Operating System) program. To return to the MMMFAX program, type **mmmfax** on the 7960 Keyboard and press **Enter**.

Loading a Film Cartridge

OPTIONS: If a 110 RFT (Roll Film Transport) or 658 Film Handler is being used instead of the 210 CAT, see tabbed section "FILM TRANSPORT (Roll)" or "FILM TRANSPORTS (Fiche)" respectively.



Note

The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity. Press the **ENTER** Key on the 7710 Scanner Keyboard to light the Viewing Screen.

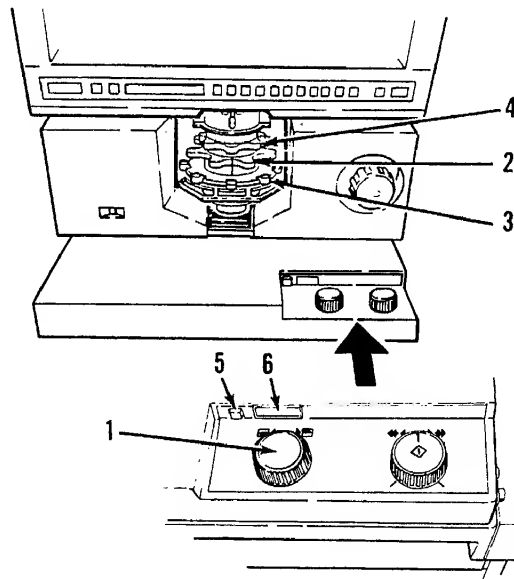
1. Insert a 3M or ANSI style film cartridge into the Cartridge Insertion Slot (1) as shown. The Film Leader should be on the right side of the cartridge pointing down. The green Cartridge Indicator (2) will show when the cartridge is loaded correctly, and the film will automatically thread.

Note

If the film does not wrap around the Film Take-Up Reel successfully, the 210 CAT will automatically attempt a second threading sequence. If this attempt also fails, read the 210 CAT Error Code Display and see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-2.

2. Turn the Film Speed Control (3) slowly clockwise until the first image appears on the Viewing Screen. Film Speed is proportional to the degree you rotate the knob.
3. Turn the Manual Film Scan Control (4) clockwise to move the image to the right or counter-clockwise to move the image to the left to position the image within the fiducial marks on the Viewing Screen.

Adjusting the Viewed Image



1. Turn the Film Traverse Control (1) to center the image within the horizontal fiducial marks on the Viewing Screen. Turn the Film Traverse Control (1) clockwise to move to images in the A Row or counter-clockwise to move to images in the B Row on multi-level film.
2. Turn the green colored Zoom Wheel (2) on the 7710 to display the image on the Viewing Screen as large as possible while remaining within the fiducial marks. If the film image cannot be adjusted to reach the fiducial marks, a Zoom Lens Assembly of a different magnification is needed (see tabbed section "READER-SCANNER", Changing the Zoom Lens Assembly, page RS-40).

Note

Once a clear, sharp image has been focused, you should not have to refocus again even when changing magnification. At 6.5X to 14X, if there appear to be shadows in the corners of the Viewing Screen, move the Fresnel Lens Adjustment Handle to 6.5X to 14X.

3. Turn the Focus Wheel (3), if needed, to adjust for the sharpest screen image.
4. Turn the Image Rotation Wheel (4) to rotate the image if necessary.

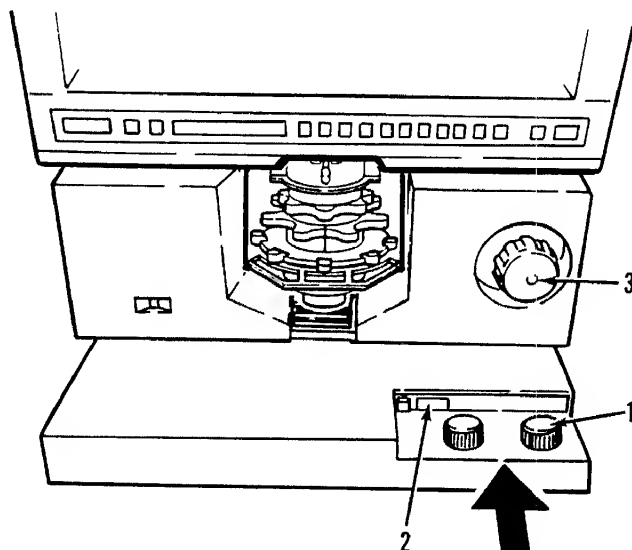
Note

Each digit change on the display represents about 1/2 inch (12 mm) of film travel. Thus a display of 2400 represents about 100 feet (30 m) of film travel which is normally a full reel of 5.7 mil thick film.

5. Push the Film Odometer Reset (5) for a 0000 display on the Film Odometer (6).

Locating a Desired Image

OPTIONS: If the 110 RFT (Roll Film Transport), 915, 916, 917, or 658 Fiche Handlers is used instead of the 210 CAT, see tabbed section "FILM TRANSPORT (Roll)", or "FILM TRANSPORTS (Fiche)" respectively. If images are to be located using the Page Search, see tabbed section "PAGE SEARCH".



Note

Turn the Film Speed Control (1) to the "0" position to stop film movement. Always return the Film Speed Control (1) to the "0" position when not searching film.

1. Turn the Film Speed Control (1) slightly clockwise to scan film forward slowly or slightly counter-clockwise to scan film backward slowly. Turn the Film Speed Control (1) fully clockwise to advance film quickly or fully counter-clockwise to reverse film quickly to a known Film Odometer (2) reading.
2. Turn the Manual Film Scan Control (3) clockwise to slowly advance film or counter-clockwise to slowly reverse film. Center the image within the vertical fiducial marks on the Viewing Screen.

Setting the Reader-Scanner Operating Parameters

Several Reader-Scanner functions are controlled by "parameters" that can be changed as necessary via the Scanner Keyboard to adapt the system to handle microfilm of varying quality or type for example. Under normal circumstances you will not often be required to change these parameters, but you should be aware of their existence and the versatility they afford your system. On the other hand, if you change certain parameters quite often, you can define parameter macros. Parameter macros are parameters made up of long strings of Key commands reduced to just a few. See Storing and Retrieving Parameter Macros, tabbed section "READER-SCANNER", page RS-35, for instructions.

To determine the current values of the parameters:

1. Press **PMTR** to display the parameter values on the Scanner Display.

```
MDIIP= 44  Film= Neg
Exposure= Manual (2)
Mask= Off   Res= 200
Photo= Off  Copy#= 1
```

Note

The values shown are factory default.

2. If your operating situation requires that any of the parameter values be changed, refer to the tabbed READER-SCANNER section of this manual for instructions.

Note

Parameters can be changed for a single scan cycle, for a work session (until power is removed), or permanently (by setting a new default value). See the READER-SCANNER section for details.

3. If the parameters are acceptable to your operating circumstances, simply press **ENTER** or **CANCEL** to return to a system ready condition.

Parameter Definitions:

- MDIIP (Microfilm Digital Image Improvement Process)--This process actually involves two image enhancement parameters:
 - Threshold- This parameter can be changed to enhance the quality of an image by lightening the image background.
 - Gain- This parameter can be changed to darken the image.
- Exposure--This parameter can be changed to either lighten or darken both the image and background.
- Masking--This parameter allows you to exclude portions of the image area from the print or FAX. This saves print toner and also increases the speed of FAX transmission.
- Photo--This parameter allows you to enhance the portion of a document image area that contains a photograph.
- Film--This parameter allows you to specify the polarity of the microfilm to be used: negative or positive.
- Resolution--This parameter allows you to select image resolution: either 200 dpi or 300 dpi.
- Size--This parameter allows you to specify the size of the prints: either "Letter" (8-1/2 in by 11 in. or European A4 (210 mm by 297 mm).
- Copy#--This parameter allows you to specify the number of prints received per each print request: 1 through 9.

Making a Print

When a print is requested, the image displayed on the Viewing Screen can be printed on the 7941 Laser Printer as a proof copy before FAXing, or as a single hard copy. The screen image is scanned and digitized by the 7710, transferred to the 7960 Controller and printed by the Laser Printer.

Note

If the Reader-Scanner Projection Lamp goes out and the Scanner Display reads "Standby", press the **ENTER** Key on the Reader-Scanner Keyboard. For any other message that may appear, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-3.

3M FAX	Copyright 3M Company 1991	2.0
<div style="border: 1px solid black; padding: 5px; margin: 10px;"> 34567890 </div> <div style="border: 1px solid black; padding: 10px; margin: 20px auto; width: 80%;"> <p>➡ Transfer Images from M7710</p> <ul style="list-style-type: none"> Create FAX Cover Sheet Initiate On-Line FAX Receiver Phone List Sender Phone List Status of FAX Queues Status of Processed Queue Status of Pending Queue Options Management Menu Exit 3M FAX </div>		
Use arrows (↓ ↑) to select option. Press ENTER to accept.		

	3M FAX	Copyright 3M Company 1991	2.0
	Ready to transmit images..... Waiting for scan image 1		
Function Keys	F1=Dump images F5=Delete last image ESC=Exit transfer		
Print Screen	Waiting for printer image 1 Reading print image 1		

Making a Print (continued)

To make a single print:

1. From the Main Menu of the 7960 Controller, highlight "Transfer Images from 7710" using the ↓ and ↑ Keys, if necessary, and press **Enter**.
2. Press the **PRINT** Key on the 7710 Scanner Keyboard. The Paper Exit Tray of the Laser Printer receives the printed image.

Note

The default number of prints is 1 each time the **PRINT** Key is pressed. To make up to 9 prints each time the **PRINT** Key is pressed, see tabbed section READER-SCANNER, Changing the Number of Prints, page RS-4. To change the number of prints for only one print cycle, see Changing a Parameter Setting for One Print or Scan Cycle, page RS-32. To reset the number of prints to the default setting, see Resetting a Parameter to the Default Setting, page RS-33. To change the default number of prints, see Changing a Power ON Default Parameter Setting, page RS-34.

3. Continue locating microfilmed document images, enhancing their image if desired and pressing **PRINT** each time a print is desired.

Note

Once the Print Key is pressed a print cannot be cancelled. Press the **Esc** Key on the Controller Keyboard or **FXEND** on the 7710 Scanner Keyboard to return to the Main Menu.

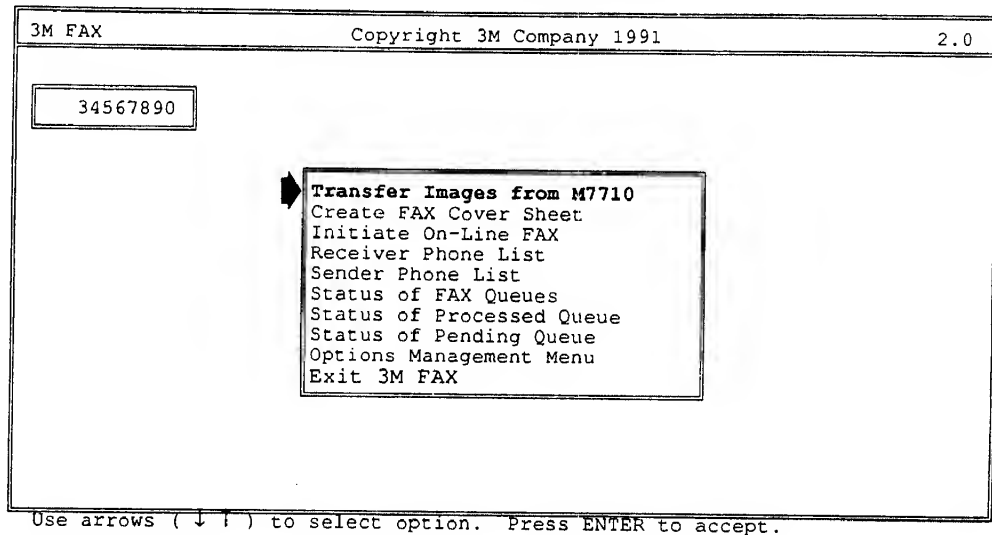
FAXing a Document Image Package

To electronically transfer document images from the 7710 Reader-Scanner to the 7960 Controller for FAXing to any Group III FAX machine throughout the world use the following procedures:

Note

If the Reader-Scanner Projection Lamp goes out and the Scanner Display reads "Standby", press the **ENTER** Key on the Reader-Scanner Keyboard. For any other message that may appear, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-3. For any messages or codes that may appear on the 7960 Monitor, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-13 and DT-20 respectively.

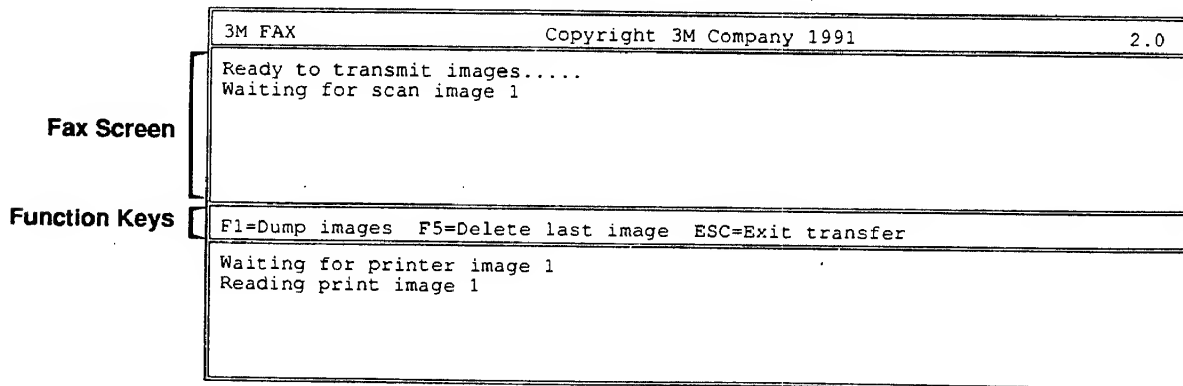
1. Highlight (reverse video) "Transfer images from 7710" on the Main Menu of the Controller using the Controller **↑** and **↓** keys, if needed, and press **Enter** on the Controller Keyboard.



Note

To cancel a scan operation in progress, press the **CANCEL** Key on the 7710 Scanner Keyboard. The display will flash "Cancel Pending" followed by "Image Canceled".

2. Press the **SCAN** Key on the Reader-Scanner Keyboard.



FAXing a Document Image Package (continued)

Note

You must wait for the "Ready" message on the Scanner Display but not the "Waiting for image x" message on the Controller Display before pressing **SCAN** again.

3. Continue locating microfilmed document images, enhancing their image if desired, and pressing **SCAN** each time a new document image is to be transferred to the Controller for FAXing. You can include up to 99 images in one document package.

Note

If this entire batch of images transferred from the Reader-Scanner to the Controller is decided not to be FAXed to a remote location, press the **F1** Key on the Controller Keyboard to erase the images. The Controller will ask "Are you sure? (Y/N):". Pressing **Y** dumps the stored images and returns the Controller to wait for the new first image to be transferred. Pressing **N** returns the Controller to wait for the next image to be transferred. If you decide not to FAX the last image transferred anytime during the transfer session, press **F5**. The Controller will ask "Are you sure (Y/N):". Press **Y** to delete the last image or press **N** if you wish to keep it.

4. Press the **Esc** Key on the Controller Keyboard or **FXEND** on the 7710 Scanner Keyboard when you have completed the batch of document image transfers, and return to the Main Menu.
5. Highlight "Create FAX Cover Sheet" from the Main Menu using the **↓** and **↑** keys, if needed, and press **Enter** on the Controller Keyboard. The Cover Sheet displayed on the Monitor will display the last receiver and the last sender highlighted. See tabbed section "FAX CONTROLLER", Editing the Cover Sheet, page FC-5.

3M FAX		Copyright 3M Company 1991		2.0	
To :	_____	FAX # :	_____	Phone # :	_____
From :	_____	FAX # :	_____	Phone # :	_____
Subject :	_____				
Delayed Delivery Time :		_____	Date :		_____
Enter recipient information					
F1=Phone List F2=Clear Field F4=Broadcast F8=Send F9=Add'l Subj ESC=Quit HOME,END					

6. Review the Cover Sheet information displayed on the Controller Display. If the information is correct, press **End** to move the cursor to the Subject Field, type in the subject and press **Enter**. The normal subject field is limited to 60 characters. However, an option exists which allows you to add an additional paragraph (17 lines of 80 characters each) by pressing **F9**. You can also broadcast the document package to several locations from the Cover Sheet Menu. Press **F4** and see tabbed section "FAX CONTROLLER", Broadcast Cover Sheet, Page FC-11.

Note

The **Backspace**, **F1**, and **F2**, Keys are used to edit the Cover Sheet. See tabbed section "FAX CONTROLLER", page FC-8, for their description and use.

FAXing a Document Image Package (continued)

7. If you want the Delivery Time to be delayed, press **Tab**, **Enter**, or the ↓ and ↑ arrows to move the cursor to the Time Field. Type in the military time in hours, minutes, and seconds ignoring the "beep" and the ":" which is entered automatically. Remember to type a "0" in front of single digit entries (16:05:00).
8. If the Delivery Delay Date is today's date and the Cover Sheet is correct, press **F8** to FAX the documents. Otherwise, press **Tab**, **Enter**, or the ↓ and ↑ keys again to move the cursor to the Date Field. Type in the month, day, and year, ignoring the "beep" and the "/" which is entered automatically. Remember to type a "0" in front of single digit entries. Example: 09/05/90.
9. When the Cover Sheet has been completed, press **F8** to FAX the documents. The documents will be FAXed immediately if a line is open, or at the specified delayed time. The Controller Display will return to the Main Menu and the message "FAX queue submission successful" will appear. For any other messages that may appear, see tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-13.

Note

If the FAX Queue is long and you wish to prioritize a document package, you may enter an earlier time and/or date. Then that particular document package will "bump" ahead in the queue.

10. If you need to resend a FAXed document, see tabbed section "FAX CONTROLLER", page FC-19.

Using a Host Computer to Retrieve and Print or FAX Images

The instructions provided below apply only to systems that are connected to a host computer and display terminal via a communications line. The communications line is part of an Asynchronous Protocol Interface Kit installed in a 7756 Page Search. The system can operate in four communications modes:

- 3M Direct Search
 - 3M Download
 - 3M Enhanced Download
 - CAR Mode
1. From the 7710 Page Search Keyboard, press **MOD** and ensure the 7756 is set to the desired mode. See tabbed section "PAGE SEARCH", page PS-2, to change the mode or press **CLR**.
 2. Request a download from the Host Computer if performing a download in 3M Enhanced Download Mode. Or key in **CLR 8888 L 02 L** if in 3M Download Mode or CAR Mode.
 3. When the download is complete, press **CLR**.
 4. From the 7960 Controller, highlight "Initiate On-Line FAX" (or Transfer Images from 7710" if not DMS or WorkManager) and press **Enter**.

3M FAXCopyright 3M Company 19912.0

34567890

Transfer Images from M7710
Create FAX Cover Sheet
Initiate On-Line FAX
Receiver Phone List
Sender Phone List
Status of FAX Queues
Status of Processed Queue
Status of Pending Queue
Options Management Menu
Exit 3M FAX

Use arrows (↓ ↑) to select option. Press ENTER to accept.

Main Menu

Using a Host Computer to Retrieve and Print or FAX Images (continued)

	3M FAX	Copyright 3M Company 1991	2.0
Fax Screen	Ready to transmit images..... Waiting for scan image 1		
Function Keys	F1=Dump images F5=Delete last image ESC=Exit transfer		
Print Screen	Waiting for printer image 1 Reading print image 1		

Transfer Screen

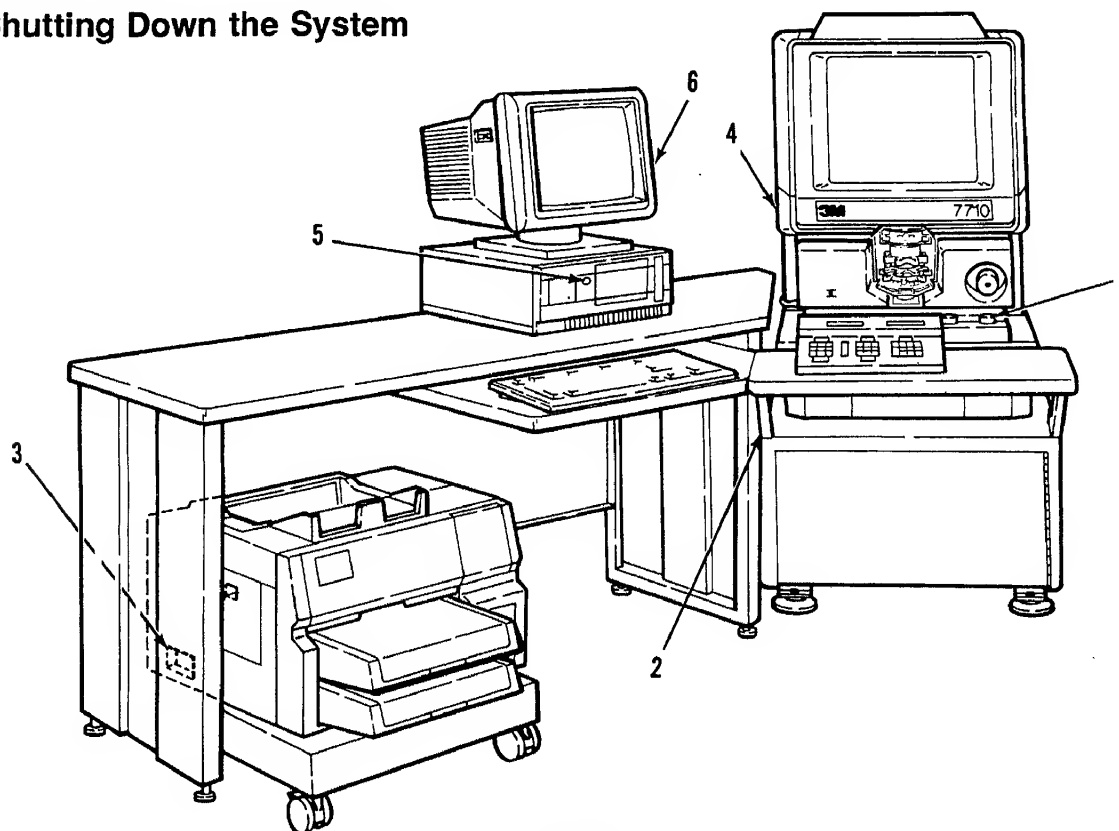
5. Press **MOD STP** to search and view, or **MOD AUTO** to search and print, or search and FAX. (The Reader-Scanner must be in Printer Mode for printing or Scanner Mode for FAXing. See tabbed section "PAGE SEARCH", pages PS-5 and PS-8).

Note

If you wish to enhance an image, change the number of copies, modify a Cover Sheet, or for any other reason wish to stop the automatic sequence, press **CLR**. Press **B STP** or **B AUTO** to resume. Press **RUN** to rewind film and eject the cartridge.

See tabbed section "PAGE SEARCH", pages PS-46 through PS-51 for further information.

Shutting Down the System



CAUTION

Ensure all documents have been processed before switching off the Controller.

1. Remove the film from the film transport. Turn the Film Speed Control (1) counter-clockwise until the film runs out and then back to "0" for the 210 CAT and 110 RFT. Press **RUN** if a Page Search is installed. If a Fiche Handler is used, pull out the Fiche Handler and remove the fiche.
2. Highlight "Exit 3MFAX" displayed on the Main Menu of the 7960 Controller Monitor and press **Enter**. Then press **Y** to confirm the exit. The system will exit the MMMFAX program and enter the DOS (Disk Operating System) program. This is indicated by a C:\MMMFAX> prompt.

Note

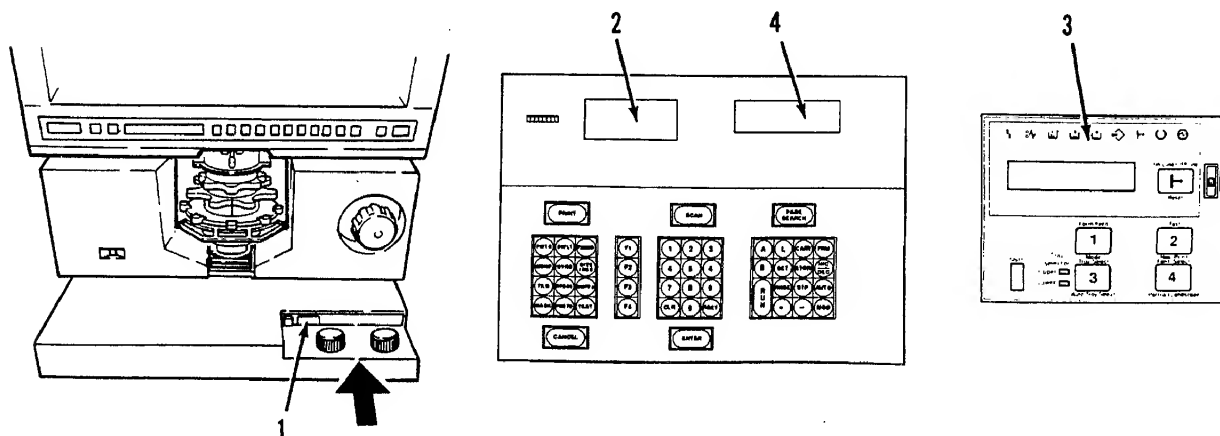
If a Power Strip is used to control your Workstation, simply switch the Power Switch to the "OFF" position.

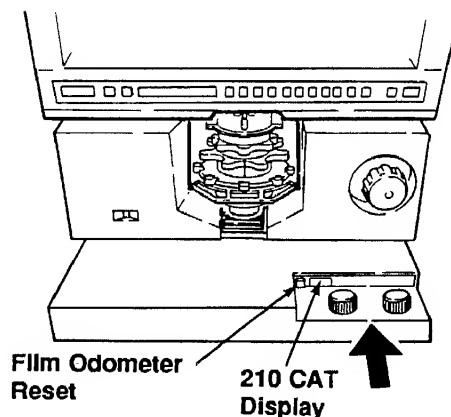
3. Press the Power Switch (2) for the 7756 Page Search to the "0" (OFF) position.
4. Press the Power Switch (3) for the 7941 Laser Printer to the "0" (OFF) position.
5. Press the Power Switch (4) for the 7710 Reader-Scanner to the "0" (OFF) position.
6. Press the Power Switch (5) for the 7960 Controller in to the "0" (OFF) position.
7. Push the Power Switch (6) for the 7960 Controller Monitor to the "0" (OFF) position.

Table Of Contents

Display Codes and Messages	DT-2
210 CAT	DT-2
7710 Reader-Scanner	DT-3
7941 Laser Printer	DT-5
7756 Page Search	DT-8
7960 Controller	DT-14
Troubleshooting	DT-24
Image Retrieval (Fiche Handlers)	DT-24
Image Retrieval (110 RFT)	DT-25
Image Retrieval (210 CAT)	DT-26
Image Retrieval (7756 Page Search)	DT-27
Image Viewing (7710 Reader-Scanner)	DT-28
Image Printing (7710 Reader-Scanner)	DT-30
Image Printing (7941 Laser Printer)	DT-31
Operator Tests	DT-34
Version	DT-34
Printed Test Pattern	DT-34
FAXed Test Pattern	DT-36
Reset the 7710	DT-37
Scan Count	DT-37
Printer Test	DT-38
Calling for Service	DT-39

This section describes how to interpret display codes and messages and how to troubleshoot the 7710 Reader-Scanner System. Also included are troubleshooting tables for each of the major components of the system and how to call for service when needed. Display Codes for the 210 CAT appear on the Error Code Display (1). Display Codes and messages for the 7710 Reader-Scanner appear on the Scanner Display (2). Indicator lights and Display Messages for the 7941 Laser Printer appear on the Indicator Panel (3). Error Codes and messages for the 7756 appear on the Page Search Display (4). Error messages for the 7960 Controller appear on the 7960 Monitor.



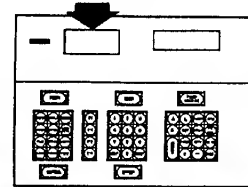
Display Codes - 210 CAT

The 210 CAT (Cartridge ANSI Transport) Display will display a single-digit code to indicate an error during film loading, image retrieval, or film rewind. If the problem persists, the Film Odometer Reset should be pressed to indicate three additional digits. The 4-digit display code should then be reported to the service technician. See Calling for Service, page DT-39.

Display Code	Cause	Action
1XXX	The film broke or the trailer detached.	Repair film and retry. See FILM TRANSPORT (Cartridge), page CF-7. Press Film Odometer Reset.
	The automatic cartridge eject function didn't work.	Eject the cartridge manually. See FILM TRANSPORT (Cartridge), page CF-6. Press Film Odometer Reset.
2XXX	Film didn't load correctly.	Check the orientation of the cartridge and retry. See OPERATING SEQUENCE, page OS-4.
	The Drive Roller is dirty.	Clean the Drive Roller. See FILM TRANSPORT (Cartridge), page CF-3.
	The film leader is bent or curled.	Flatten the curl or trim the damaged film leader.
3XXX	The film leader jammed.	Eject the cartridge manually. See FILM TRANSPORT (Cartridge), page CF-6. Press Film Odometer Reset.
	The automatic cartridge eject function failed.	Eject the cartridge manually. See FILM TRANSPORT (Cartridge), page CF-6. Press Film Odometer Reset.

Display Codes - 7710 Reader-Scanner Power Up Error Messages

When the 7710 Power Switch is pressed to the "1" (ON) position, the 7710 automatically performs a Power-Up Diagnostics Sequence. If no errors are detected, the Scanner Display will display a "Ready" message. If an error is detected, the following message will appear "Ready Power Up Diag Fault!! See Fault Log!!!!!!". See 7710 Power Up Fault Log below.



7710 Power Up Fault Log

Display Message	Corrective Action
2681 Channel A Fail 2681 Channel B Fail s2681 Channel A Fail s2681 Channel B Fail 7971 Processor Fail 8255 DIS Port A Fail 8255 DIS Port B Fail 8255 DIS Port C Fail 8255_LP Port A Fail 8255_LP Port C Fail 8255_MC Port A Fail 8255_MC Port C Fail 8255_PID Port A Fail 8255_PID Port B Fail 8255_PID Port C Fail 8255_PS Port A Fail 8255_PS Port C Fail 8259 Faulted! 8259 Reg Test Fault! 8279 Faulted! 8279 Test Faulted! 82786 Faulted! 82786 Reg Test Fault! Compression Error Compression RAM Fail Configuration failed DRAM Address 0 fail EPROM Error Expansion Error Gmem-Offset Faulted! Graphic DRAM Failure Invalid ICB Config Invalid INT Detected Invalid NMI Detected Midrange EPROM Bad OOPS! EPROM Failed OOPS! LCD Error * OOPS! SRAM Failed OOPS! Stack Error OOPS! Timer 2 Error Printer Error RAS0, CAS0 & CAS1 Error RAS1, CAS0 & CAS1 Error RAS2, CAS0 & CAS1 Error RAS3, CAS0 & CAS1 Error SCSI Failed Selftest SCSI Software Error SCSI Subsystem Fail SCSI Task Terminated Software Timer Subsystem Faulted	<p style="text-align: center;">Note</p> <p>If a display message appears that is not listed: 1) record the message; 2) switch OFF the 7710 then ON; and 3) continue using the system. If the error recurs, call for service.</p> <p>For all Power-Up error messages: Continue to press the ENTER key until the "Ready" message appears. Record the Error Message(s) each time ENTER is pressed. Switch OFF the Reader-Scanner then switch ON again. If the error recurs, check for loose connections. If you can't correct the problem, switch OFF the Reader-Scanner and call for Service (page DT-39).</p>

* If no display, adjust Contrast Control.

Display Codes - 7710 Reader-Scanner System Display Messages

Scan Failure Messages - Scan failure messages will display during a scan cycle initiated by pressing **PRINT** or **SCAN**. Scan failure messages are identified in the 7710 Scanner Display Messages, page DT-4, by a "2".

SCSI Failure Messages - SCSI (Small Computer Systems Interface) failure messages will display only if a 7960 Controller is part of the system. SCSI failure messages are identified in the 7710 Scanner Display Messages, page DT-4, by a "3".

If one of the following messages appears on the 7710 Reader-Scanner Display, follow the corrective action listed below. If an error message is displayed that is not listed below: 1) record the message; 2) switch OFF the 7710 then ON; and 3) continue using the system. If the error recurs, call for service, page DT-39.

Display Message	Corrective Action
Command Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Data In Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Data Out Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Disconnect from Host ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
DMA Transfer Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Gp ECL failed to SET ²	Press TEST 7 ENTER to reset. If error recurs, call for Service. See page DT-39.
Gp failed to Intr ²	Press TEST 7 ENTER to reset. If error recurs, call for Service. See page DT-39.
Graphic Memory ²	Press TEST 7 ENTER to reset. If error recurs, call for Service. See page DT-39.
Hardware fault ²	Press TEST 7 ENTER to reset. If error recurs, call for Service. See page DT-39.
Message Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
NCR Gross Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
OOPs! SCSI Bus Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Power Up Diag Fault!! ¹ See Fault Log!!!!!!	Power Up failure, see 7710 Power Up Fault Log, page DT-3.
Scan Block Faulted! ²	Press TEST 7 ENTER to reset. If error recurs, call for Service (see page DT-39).
Scan Failure XX * ²	Press TEST 7 ENTER to reset. If error recurs, call for Service (see page DT-39).
Scan System Failed ²	Press TEST 7 ENTER to reset. If error recurs, call for Service (see page DT-39).
SCSI BUS Disconnect ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
SCSI Detect Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
SCSI Subsystem Fail ³	Switch off the Reader-Scanner and call for Service (page DT-39).
SCSI Task Terminated ³	Switch off the Reader-Scanner and call for Service (page DT-39).
Select Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Stat/Mes Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Status Phase Error ³	Check cable connections. Try again. If error recurs, call for Service, page DT-39.
Software Fail Code	Call for Service (see page DT-39).

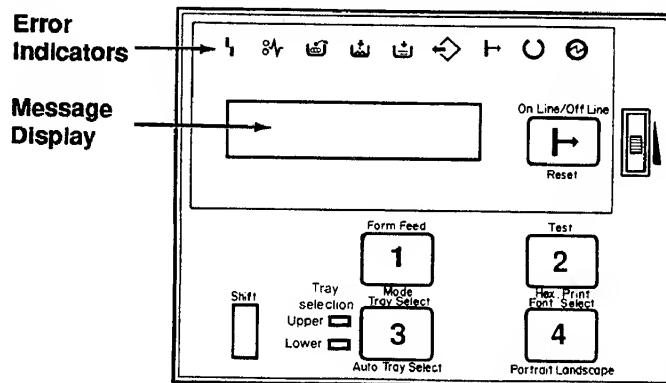
* XX equals any number from 00 to 99. 1; Power Up Failure, 2; Scan Failure, 3; SCSI Failure

7941 Message Display Error Messages

The following tables list messages that appear on the Message Display to indicate problems with the 7941 Laser Printer. Normally a message will occur in conjunction with the lighting of one of the indicator lights on the 7941 Control Panel. For example, the Toner Supply Indicator () lights and the message "TONER LED lit" appears on the Message Display. The cause is a low supply of toner and the correction is to replace the Toner Cartridge. If the Error Indicator () flashes and the message indicates a hardware or software problem, always switch OFF power to the 7941 then ON again. If the error recurs, record the message and call for service.

Controller Board Error Messages

Message	Description	Recommended Action
MEMORY ERROR 001	Printer had a problem with its internal memory while doing an immediate write and read test.	Switch the printer OFF then ON again. If the error recurs, call for service, page DT-39.
MEMORY ERROR 002	Printer had a problem with its internal memory while doing a write, wait, then read test.	Switch the printer OFF then ON again. If the error recurs, call for service, page DT-39.
CNTRLR CPU ERROR	An error has been detected on the Controller Board. This error can be anything from a data crash to a faulty component.	Switch the printer OFF then ON again. If the error recurs, call for service, page DT-39.
RS-232C ERROR	An error has been determined while communicating on the serial port.	Press Form Feed to clear the error message. If the error recurs, call for service, page DT-39.
LACK OF MEMORY	The printer received more data from the Controller Board then could fit into its memory.	Press Form Feed to continue printing. Press On-Line/Off-Line/Reset to clear memory. If the error recurs, call for service, page DT-39.
BAD NOVDRAM ERROR	A bad check sum was determined while testing the non-volatile memory.	Press Form Feed to clear the error message. If the error recurs, call for service, page DT-39.



7941 Message Display Error Messages (continued)**Engine Error Messages**

Message	Description	Recommended Action
ENGINE CPU ERROR	The Engine Drive Board that controls all engine related operations has failed.	Switch OFF the printer, then back ON. If the error recurs, call for service, page DT-39.
OPTICAL ERROR	A fault in the laser drive or synchronization circuit has occurred.	Switch OFF the printer, then back ON. If the error recurs, call for service, page DT-39.
MAIN MOTOR ERROR	The Main Motor is inoperative.	Switch OFF the printer, then back ON. If the error recurs, call for service, page DT-39.
FUSING ERROR	A fault in the fusing unit section of the printer has occurred.	Switch OFF the printer, then back ON. If the error recurs, call for service, page DT-39.
OPC SYNC ERROR	OPC synchronization mark could not be found by the engine.	Check OPC for soiled synchronization mark. Replace OPC Cartridge if necessary. If the error recurs, call for service, page DT-39.

Paper Jam Error Messages

Message	Description	Recommended Action
EXIT JAM	No paper passed the exit sensor. Paper is jammed in the paper path ahead of the exit sensor.	Open the Paper Exit Cover and remove the jammed paper. The cover must be opened and closed before the printer will resume printing.
TRANSPORT JAM	No paper passed the exit sensor. Paper is jammed in the paper path ahead of the exit sensor.	Open the Paper Exit Cover and remove the jammed paper. You may need to remove a paper tray. The Paper Exit Cover must be opened and closed before the printer will resume printing.
LC MISFEED	Paper did not reach the registration sensor following the start of a paper feed.	Remove the Lower Paper Tray and remove the jammed paper.
UC MISFEED	Paper did not reach the registration sensor following the start of a paper feed.	Remove the Lower Paper Tray and remove the jammed paper.

7941 Message Display Error Messages (continued)

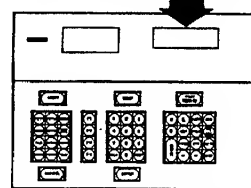
Print Engine Sensor Error Messages

Message	Description	Recommended Action
DEVELOPMENT OPEN	The Developer Assembly is not pushed all the way in.	Fully close the Developer Assembly.
TONER COVER OPEN	The Left Cover is open.	Close the Left Cover.
FUSING UNIT OPEN	The Exit Cover is not fully closed.	Close the Exit Cover.
PAPER STACK SIZE	The Paper Exit Tray is not set for the correct size paper.	Set the Paper Exit Tray to the correct size or select a Paper Tray having a different paper size.
COLLECTOR FULL	The Used Toner Collector Bottle is full or has not been installed.	Replace the Used Toner Collector Bottle.
LC COVER OPEN*	The Cover on the Lower Paper Tray is not closed. Or, the Lower Paper Tray is not installed.	If paper is jammed, remove the jam. Close the Lower Paper Tray.
UC COVER OPEN*	The Cover on the Upper Paper Tray is not closed. Or, the Lower Paper Tray is not installed.	If paper is jammed, remove the jam. Close the Lower Paper Tray.
LC LOAD XXXXXX*	The Lower Paper Tray is out of paper. (XXXXXX defines the required paper size.	Remove the Lower Paper Tray, raise the cover, and add paper.
UC LOAD XXXXXX*	The Upper Paper Tray is out of paper. (XXXXXX defines the required paper size.	Raise the cover for the Upper Paper Tray and add paper.

- * These Error messages will display momentarily. This is to allow removal of a paper tray to add paper without interruption of the automatic paper tray mode.

LED Indicator Error Messages

Message	Description	Recommended Action
OPC LED lit	Page Counter has recorded 25,000 cycles.	Replace the OPC Cartridge.
TONER LED lit	Toner supply is low.	Replace the Toner Cartridge.
PAPER LED lit	Selected paper tray is out of paper.	Add paper.

Display Codes - 7756 Page Search**7710 Page
Search Display**

Occasionally during a page search operation, a function will halt and a message will appear on the 7710 Page Search Display. Usually the display will be self explanatory. However some messages will be followed by a Display Code (In some cases the Code Number will appear without a message.) For example OPERATOR INSTRUCTION, #0010. Press the **MOD** Key when a system message appears on the Page Search Display and a second message will appear. See the following table for a more detailed explanation of the system display codes and messages:

CODE	DEFINITION/OPERATOR ACTION
^ ^ ^	A small "A" shown in any position on the display indicates that the machine has lost the blip count. Press + or - to attempt a recovery.
0007	FILM DID NOT LOAD. PRESS CLR, TRY AGAIN - Film didn't wrap properly. Check film leader for curl and retry.
0009	PUSH CARTRIDGE IN - The film cartridge is not pushed in all the way. Push in until latched.
0010	REWIND FILM, THEN CHANGE MODE - You are not allowed to change modes with film loaded. Press CLR and RUN to rewind film.
0012	LOAD FILM & PRESS CLR - You are not allowed to make a print without film loaded. Load a film cartridge.
0014	TRAVERSE TO THE B ROW - Search is in the A Row. Press CLR and use the Film Traverse Control to the display image received in the B Row.
0015	TRAVERSE TO THE A ROW - Search is in the B Row. Press CLR and use the Film Traverse Control to the display image received in the A Row.
0020	SEARCH ERROR. REWIND FILM & RETRY - The system is having counting problems. Count may be off. Press CLR and RUN to rewind Film. If the problem recurs, call for Service, page 39.
0021	END OF FILM - You have reached the end of the film. Turn the Film Speed Control counter-clockwise to rewind.
0022	Counting problem. Press CLR and RUN to rewind film. Reload film and resume operation.
0023	END OF FILM, CHECK INDEX - The end of the film has been sensed. Press CLR . Rewind film or enter a new search number.
0024	CHECK FOR INDEX ERROR - You have entered a number larger than the actual number of blips in the Block, Batch, or Item Group. Press CLR to display the current location. Then press - to back up film and display Item (or Batch) number. If your film contains Film Control Code, the desired image may be elsewhere on the roll. In this case, press B and RUN to continue to search; if the end of film is reached before the image is found, press RUN to rewind film. Reload film and enter the document number to search from the beginning of the film.

Display Codes - 7756 Page Search (continued)

CODE	DEFINITION/OPERATOR ACTION
0025	CONTROL CODE ERROR, RESET OR REWIND FILM -Error in the Film Control Code. Reset the Blip count to the appropriate number or rewind the film and re-insert cartridge to retry.
0026	NO BLIPS FOUND, CHECK FILM - System did not locate a blip on film within 9 seconds after CLR was pressed. Check that you are using blipped film.
0027	INVALID NUMBER, CHECK INDEX - Film has rewound during search for a document. You entered an invalid number, film is not blipped, or machine is malfunctioning (call for Service, page DT-39). Press CLR to remove code.
0028	PRESS CLR & INSERT CARTRIDGE - Film is not loaded. Press CLR and insert a cartridge.
0029	ENTER A NUMBER BEFORE RESET - Use of RSET is invalid unless a preceding number is entered. Press CLR to remove code.
0030	FILM DID NOT STRIP, CHECK FILM - Film didn't wrap properly. Check film leader for curl. If problem recurs, remove curl from film leader and/or trim film end with scissors. Reinsert cartridge.
0036	Electronic problem. Switch 7756 power OFF, then ON. If error recurs, call for Service, page 39.
0050	PRINT ERROR - Reader-Scanner error. See 7710 Reader-Scanner, page DT-3.
0060	You have pressed keys in the wrong sequence. Press CLR .
0061	INVALID CODE - You have entered an invalid diagnostic code. Press CLR .
0062	TOO MANY DIGITS - You have entered more digits than the display can receive. Press CLR .
0063	L KEYING ERROR - You have pressed the L Key in an incorrect sequence. Press CLR .
0064	TOO MANY PRINTS - You have requested too many prints or scans. The maximum number allowed is 99. However, your machine may be set for a lower maximum number. Press CLR to continue.
0065	"A" KEY USED TOO MANY TIMES - You have pressed A too many times in the document number sequence. Press CLR .

Display Codes - 7756 Page Search (continued)

CODE	DEFINITION/OPERATOR ACTION
0066	INVALID MODE NUMBER - You have entered an invalid Mode number. (Only 1 through 18 are valid.) Press CLR .
0067	INVALID PARAMETER NUMBER - You have entered an invalid parameter number. (Only 1 through 5 are valid.) Press CLR .
0068	RESET BLIP NO. OR REWIND - Machine has lost the blip count. Press CLR , then reset the count by entering the number of the displayed image and pressing RSET . (If you prefer, press CLR and RUN to rewind film, then reload film and restart.
0070	SELF-TEST Error. TURN POWER OFF & ON - Machine self-test problem. Switch 7756 Page Search power OFF, then ON. If the problem recurs, call for Service, page DT-39.
0072	LCD NOT RESPONDING. CLR TO CONTINUE - Machine self-test problem. Switch 7756 Page Search power OFF, then ON. If the problem recurs, call for Service, page DT-39.
0094	PRESS CLR. REWIND FILM AND RETRY - 7756 Page Search electronics problem. Press CLR . Rewind film (if loaded) and re-try operation. If problem recurs, call for Service page DT-39.
0099	System electronic problem. Switch 7756 power OFF, then ON to clear error. Resume operation. If error recurs, call for Service page DT-39.
0189	B SET - Function for changing image registration is not allowed over a long range. Press CLR .
0200	NO CARTRIDGE NO. STORED - No cartridge numbers are stored in the Memory Registers. Press CLR .
0201	NO CARTRIDGE OR FRM NO. STORED - No cartridge or frame numbers are stored in the Memory Registers. Press CLR .
0202	INC/DEC - Past Last/First Memory Register. Press CLR .
0203	LAST REGISTER. PRESS CLR - You have stored a number in the last (50th) Memory Register. Press CLR .
0204	INVALID REG. NUMBER - You have entered an invalid register number. (1 through 50 are valid). Press CLR .
0205	CHANGE MACHINE MODE - The current machine mode is not compatible with the format of the frame numbers stored in the Memory Register. Press CLR .
0206	You have specified an invalid register number in your range entry. (1 through 50 are valid.) Press CLR .

Display Codes - 7756 Page Search (continued)

CODE	DEFINITION/OPERATOR ACTION
0207	INVALID KEY SEQUENCE - MOD, RUN is not valid if a previous search has not occurred. Press CLR .
0208	Batch printing or scanning cannot be initiated because film was moved "manually". Press CLR . Use Keyboard to search to desired block or batch before attempting Batch Printing or Batch Scanning.
0210	15 SEC IS MAX. PAUSE TIME - A pause time greater than 15 seconds is not valid. Press CLR .
0211	B, STP or B, AUTO is used to resume an interrupted Step or Auto Scan or Auto Print function. Currently no function has been interrupted. Press CLR .
0220	Film control code number for the cartridge does not match the number on the loaded cartridge. If you wish to search using this cartridge, just re-insert the cartridge (see tabbed section PAGE SEARCH , Reading Film Control Codes, page PS-42).
0221	Film Control Code has specified an unknown search mode. Press CLR . Examine film for blip pattern. Change machine search mode as necessary, see tabbed section PAGE SEARCH .
0400 thru 0599	Film is not positioning properly. Press CLR and retry. If error recurs, call for Service, page DT-39.
0650	MPI NOT AVAILABLE, COMMAND IGNORED - The Communications Interface is not available.
0688	INVALID COMMAND FORMAT RECEIVED - Communications self-test problem or communications problem between communications Interface and 7756 Page Search or host computer. Switch 7756 Page Search power to OFF. Wait 5 seconds, then switch back ON. If problem recurs, call for Service, page DT-39.
0695	NO COMMUNICATIONS ESTABLISHED WITH MPI - Communications self-test problem or communications problem between communications Interface and 7756 Page Search or host computer. Switch Page Search power to OFF. Wait 5 seconds, then switch back ON. If problem recurs, call for Service, page DT-39.
0696	MPI DID NOT ACK(KNOWLEDGE) ON POWER UP - Communications self-test problem or communications problem between communications Interface and 7756 Page Search or host computer. Switch Page Search power to OFF. Wait 5 seconds, then switch back ON. If problem recurs, call for Service, page DT-39.
0697	BUFFER FULL, FLAG WAS ACTIVE - Communications self-test problem or communications problem between communications Interface and 7756 Page Search or host computer. Switch 7756 Page Search power to OFF. Wait 5 seconds, then switch back ON. If problem recurs, call for Service, page DT-39.

Display Codes - 7756 Page Search (continued)

CODE	DEFINITION/OPERATOR ACTION
0698	DATA RECEIPT TIMEOUT FROM MPI - Communications self-test problem or communications problem between communications Interface and 7756 Page Search or host computer. Switch 7756 Page Search power to OFF. Wait 5 seconds, then switch back ON. If problem recurs, call for Service, page DT-39.
0701	You have entered an invalid command. Press CLR .
0710	Your data has been downloaded correctly (no error). Press CLR .
0711	The download data string is too long (programming problem) for the Label Printer used with WorkManager or DMS programs. Press CLR and retry.
0741 thru 0743	Problem with WorkManager or DMS Label Printer. Reset the printer by entering CLR 8888 L 01 L . Switch the 7710 Reader-Scanner Power Switch to OFF then ON. Then retry. If error recurs, call for Service, page DT-39.
0750 thru 0755	Communications Interface receiver problem. press CLR and retry the operation. If error recurs, call for Service, page DT-39.
0760 thru 0765	Error in download data string (programming problem). Press CLR .
0775	A message has been sent to the external host computer. Press CLR .
0776	Problem with WorkManager or DMS Label Printer connected to machine. (If printer is overloaded with data, it will clear the error automatically when it has "caught up" with the input. Note: On some early Whisper Writers, pressing the lighted button will clear the error.)
0791	Communications Interface has receiver problem. Press CLR and retry the operation. If error recurs, call for Service, page DT-39.
0792	Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.
0901	LRC ERROR-PROM U8 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.
0902	LRC ERROR-PROM U3 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.
0903	LRC ERROR-PROM U7 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.

Display Codes - 7756 Page Search (continued)

CODE	DEFINITION/OPERATOR ACTION
0904	LRC ERROR-PROM U4 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.
0905	LRC ERROR-PROM U6 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.
0906	LRC ERROR-PROM U2 - Machine self-test problem. Switch the 7756 Page Search Power Switch OFF. Wait 5 seconds and then switch ON again. If error recurs, call for Service, page DT-39.

Display Messages - 7960 Controller

The following messages may appear on the "status" line of the Main Menu. Other informational messages may appear, but require no action.

Display Message	Description/Action
A scan image exists, do you wish to use it (Y or N):	A scan image in the 7710 buffer was ready for transfer before the transfer mode was entered. Transfer the image by pressing Y or discard it by pressing N.
Aborting print - unable to create image description! unable to set image attributes! unable to open image file!	Exit transfer mode, then re-enter. If problem recurs, exit MMMFAX program. Switch OFF 7941 Laser Printer and 7960 Controller. Check cable between 7941 and 7960. Power-up and retry. If problem recurs, call for Service, page DT-39.
Aborting print due to image error!	Exit transfer mode, then re-enter. If problem recurs, exit MMMFAX program. Switch OFF 7941 Laser Printer and 7960 Controller. Check cable between 7941 and 7960. Power-up and retry. If problem recurs, call for Service, page DT-39.
Attend to printer, then... Hit "D" to disable printing or ANY OTHER KEY to continue!	A recoverable printing system error has occurred. Press D or d to disable the printing system and continue scanning prints or correct the printer problem and press any key other than D or d to continue printing.
Backup incomplete: Could not open %s -	Try a different disc. If problem recurs, call for Service, page DT-39.
Backup incomplete: Could not open %s on drive A -	Try a different disc. If problem recurs, call for Service, page DT-39.
Backup incomplete: Error writing A:%s -	Try a different disc. If problem recurs, call for Service, page DT-39.
C:\MMMFAX\PRINT\PRT0000A.TIF - file name does not end in a numeric...	The file name of a transferred print image has been corrupted. Exit MMMFAX and rename the file so that the name has the format PRTXXXXX.TIF where XXXXX is a positive integer preceded by zeroes if necessary.
Cannot delete PRT0000X.TIF - Transfers and printing are now disabled!	Severe printing system error. Exit MMMFAX program. Delete file displayed from the print queue directory C:\MMMFAX\PRINT. Re-enter MMMFAX program and transfer mode. If problem recurs, call for Service, page DT-39.
Configuration error: Invalid receive record -	WorkManager setup error. Call for Service, page DT-39.
Configuration error: No phone list to build cover sheet -	You must have records in the WorkManager Receiver and Sender Phone Lists.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Disabling printing - unable to create printer spec! unable to reserve print engine! unable to read printer settings! unable to set print parameters! unable to get printer parameters! unable to write printer settings!	Exit transfer mode, then re-enter. If problem recurs, exit MMMFAX program. Switch OFF 7941 Laser Printer and 7960 Controller. Check cable between 7941 and 7960. Power-up and retry. If problem recurs, call for Service, page DT-39.
Error: Accessing pending list: %d -	Call for Service, page DT-39.
Error: Accessing processed list: %d -	Call for Service, page DT-39.
Error: Accessing queue file -	Call for Service, page DT-39.
Error: Clearing image	Call for Service, page DT-39.
Error communicating with M7710 -	Exit transfer mode. Check connections between 7960 and 7710. Switch OFF 7710 and 7960, then ON again. If problem recurs, call for Service, page DT-39.
Error: Creating TIFF header -	Call for Service, page DT-39.
Error: Deleting directory -	Call for Service, page DT-39.
Error: Deleting image files -	Call for Service, page DT-39.
Error: Duplicate document name: Clean out sent queue -	Maximum of 1000 document records.
Error: In date %s -	Call for Service, page DT-39.
Error: In time %s -	Call for Service, page DT-39.
Error: Invalid function for this system -	DMS or WorkManager must be installed.
Error: Invalid Input -	Reenter input.
Error: List is full -	Delete unused records.
Error: No entries to delete -	No records available.
Error: No entries to modify -	No records available.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Error-Invalid function for this system	The attempted operation cannot be done on this system.
Error: No message file available for transfer -	Retry. Check connections. Switch OFF 7710 and 7960, then ON again. If problem recurs, call for Service, page DT-39.
Error: No status message found -	Call for Service, page DT-39.
Error: Occurred modifying TIFF Header -	Call for Service, page DT-39.
Error: Opening transfer file FAX operation canceled -	Call for Service, page DT-39.
Error: Out of disk space Please clean out processed queue -	Delete unused records.
Error: Reading Images -	Call for Service, page DT-39.
Error: Reading Image %d -	Call for Service, page DT-39.
Error: Receive help file not found -	Call for Service, page DT-39.
Error: Record is active, can't delete -	Wait! Don't try to change record yet.
Error: Record values changed -	Wait! Don't try to change record yet.
Error: Renaming compressed image -	Call for Service, page DT-39.
Error: Renaming Image file-device -	Call for Service, page DT-39.
Error: Renaming Image file different paths -	Call for Service, page DT-39.
Error: Renaming Image file does not exist -	Call for Service, page DT-39.
Error: Retry count exceeded, may need to reset M7710 -	Retry. Check connections. Switch OFF 7710 and 7960, then ON again. If problem recurs, call for Service, page DT-39.
Error: Send help file not found -	Call for Service, page DT-39.
Error: Unable to create new queue record -	Call for Service, page DT-39.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Exit program, limit print queue to 35 entries!	The queue directory is full. Exit the transfer mode and MMMFAX program. Count the number of files in the C:\MMMFAX\PRINT\ directory. If there are more than 35 files, move the excess temporarily to another directory. Re-enter the MMMFAX Program transfer mode. Allow the current files to be printed. Exit MMMFAX and move no more than 35 temporary files back into the C:\MMMFAX\PRINT\ directory. Re-enter the MMMFAX transfer mode and repeat the process until all files have been printed.
Extra page printed - It may be discarded	Informational message which indicates that an extra print of an image has been made. Check prints for duplicate pages and discard if necessary.
Image queue directory path error!	An image queue directory does <u>not</u> exist. Check the MMMFAX directory for files C:\MMMFAX\SCAN\ and C:\MMMFAX\PRINT\
Insufficient disk drive space!	The hard disk of the 7960 Controller is nearly full. Wait until printing finishes, exit the transfer mode, and FAX any document packages that are ready to be FAXed. Re-enter transfer mode and continue. If error recurs, exit MMMFAX and delete unnecessary files.
Invalid image format - Image cleared	The format of the image in the 7710 buffer is <u>not</u> supported by MMMFAX. Change the format from print to scan.
Invalid Image resolution!-Image cleared	The resolution of the image in the 7710 buffer is <u>not</u> supported by MMMFAX. Change the resolution to 200 dpi.
Irrecoverable printer error!	Severe printing error occurred. Printing system is disabled automatically, but image transfer can still be done until the queue is filled.
Irrecoverable queue overflow!...	A severe queuing error has occurred and printing and print image transfer is disabled. Exit and re-enter the transfer mode. If the problem recurs, examine the print queue directory C:\MMMFAX\PRINT\ to make sure there are not more than 35 files present. Each file must have the format PRTXXXXX.TIF where XXXXX is a positive integer possibly preceded by zeros. Remove any files not having this format and re-scan that image. Re-enter MMMFAX and transfer mode. If problem recurs, remove all files from C:\MMMFAX\PRINT\ and try again. If still a problem, call for Service, page DT-38.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Irrecoverable queuing error!...	A severe queuing error has occurred and printing and print image transfer is disabled. Exit and re-enter the transfer mode. If the problem recurs, examine the print queue directory C:\MMMFAX\PRINT\ to make sure there are not more than 35 files present. Each file must have the format PRTXXXXX.TIF where XXXXX is a positive integer possibly preceded by zeros. Remove any files not having this format and re-scan that image. Re-enter MMMFAX and transfer mode. If problem recurs, remove all files from C:\MMMFAX\PRINT\ and try again. If still a problem, call for Service, page DT-39.
No "@" found in routing code -	DMS Error in Routing code.
No queue match in release!...	A severe queuing error has occurred and printing and print image transfer is disabled. Exit and re-enter the transfer mode. If the problem recurs, examine the print queue directory C:\MMMFAX\PRINT\ to make sure there are not more than 35 files present. Each file must have the format PRTXXXXX.TIF where XXXXX is a positive integer possibly preceded by zeros. Remove any files not having this format and re-scan that image. Re-enter MMMFAX and transfer mode. If problem recurs, remove all files from C:\MMMFAX\PRINT\ and try again. If still a problem, call for Service, page DT-38.
Paper Tray switched, continuing!	Informational message occurs when printer runs out of paper but switches to second paper tray automatically.
Possible page sequence error!	Informational message which indicates that two printed pages may have been swapped in order. Check prints for page sequence discrepancy. Re-sort if necessary.
Possible page sequence error due to printer error recovery!	Informational message which indicates that two printed pages may have been swapped in order. Check prints for page sequence discrepancy. Re-sort if necessary.
Printing is disabled!	Unrecoverable printing system error or after printing system is disabled following a recoverable printing system error. Printing system is no longer operational. Exit transfer mode and then re-enter. Printing system will be disabled if system problem still exists.
Printer is busy and ready! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue.
Printer is not ready! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Printer is OK and ready! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue.
Printer is out of paper! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.
Printer is out of toner! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.
Printer paper is jammed! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.
Printer is turned off! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.
Print PRT0000X.TIF lost - file open error!	Displayed print image file (X) has been lost due to a file open error. Re-scan image.
Print queue empty - resetting print have image number to 1	Informational message after approximately 29,000 print images been transferred in a single transfer mode session. No action required.
Queue overflow! Not all images queued...	The queue directory is full. Exit the transfer mode and MMMFAX program. Count the number of files in the C:\MMMFAX\PRINT\ directory. If there are more than 35 files, move the excess temporarily to another directory. Re-enter the MMMFAX Program transfer mode. Allow the current files to be printed. Exit MMMFAX and move no more than 35 temporary files back into the C:\MMMFAX\PRINT\ directory. Re-enter the MMMFAX transfer mode and repeat the process until all files have been printed.
Stop button pushed on printer! Hit D to disable printing, or ANY OTHER KEY to continue	Recoverable printer error message. Correct the specified printer problem and continue. If the problem cannot be corrected, press D or d to disable printing and continue. May print an extra page when ready.

Display Messages - 7960 Controller (continued)

Display Message	Description/Action
Switched, printer paper tray!	Informational message occurs when printer runs out of paper but switches to second paper tray automatically.
System limits have been exceeded - Allow time to process pending documents	Wait! Allow time for the Controller to finish.
Transfer or print system failure!	Unrecoverable transfer error, printer error or both. Exit transfer mode, correct error, and re-enter.
Unable to close Image file!	Exit transfer mode, then re-enter. If problem recurs, exit MMMFAX program. Switch OFF 7941 Laser Printer and 7960 Controller. Check cable between 7941 and 7960. Power-up and retry. If problem recurs, call for Service, page DT-39.
Unable to delete Image description!	Exit transfer mode, then re-enter. If problem recurs, exit MMMFAX program. Switch OFF 7941 Laser Printer and 7960 Controller. Check cable between 7941 and 7960. Power-up and retry. If problem recurs, call for Service, page DT-39.
Waiting for print Image %d	MMMFAX is waiting for an image transfer from the 7710 for printing. Locate and adjust image. Then, press PRINT .
Waiting for scan Image %d	MMMFAX is waiting for an image transfer from the 7710 for FAXing. Locate and adjust image. Then, press SCAN .

Display Codes - 7960 Controller (continued)

The following Error Codes and messages may appear on the 7960 Controller Status of Processed Queue Menu. The majority of errors you will encounter will be at the receiving end of the FAXed document package. Verify the remote FAX location is not experiencing difficulty and retry.

Error Code	Message
3200	A Digital ID signal (DIS) sign-on was not received from the remote FAX machine (Dial and Receive case). There are indications that the remote machine was either a Group 1 FAX, a Group 2 FAX, or possibly some other type of CCITT V.xx series modem.
3201	Nothing to poll; the remote FAX machine's tray is empty.
3202	Disconnect command received from the remote FAX machine.
3203	Poll attempt failed; the remote FAX machine didn't send a Digital Command Signal (DCS).
3204	Training failed; the line quality is unusable.
3205	Image quality failed - the phone line is probably noisy.
3206	Protocol failed. Disconnect sent to remote FAX machine.
3210	Digital ID Signal (DIS) received a disconnect message.
3211	Digital Command Signal (DCS) was not received from the sending FAX machine.
3212	A disconnect command was received from the remote FAX machine. Press Enter to continue.
3213	Training failed; the line quality is unusable.
3214	A disconnect command was received from the remote FAX machine.
3215	Protocol error caused a disconnect to be sent.
3220	A Digital ID Signal (DIS) sign-on was not received from the remote FAX machine (Dial and Send case). There are indications that the remote machine was either a Group 1 FAX, a Group 2 FAX, or possibly some other type of CCITT V.xx series modem.
3221	The remote FAX machine failed to confirm the page (RTN).
3222	A Procedure Interrupt was received; no confirmation.
3223	An unexpected disconnect message was received.
3224	The remote machine failed to respond.
3225	An unknown protocol message was received.
3230	A disconnect message was received.
3231	Protocol error caused a disconnect to be sent.
3232	An attempt was made to send a Modified Read compressed file to a Modified Huffman-only unit.

Display Codes - 7960 Controller (continued)

Error Code	Message
3233	An attempt was made to send a FINE resolution FAX to a machine that is not capable of receiving FINE resolution.
3234	An attempt was made to send an ECM resolution FAX to a machine that is not capable of receiving ECM FAXes, and ECM was required for the transaction.
3240	A disconnect message was received.
3241	The remote machine did not send a Digital Transmit Command (DTC).
3242	The remote FAX machine failed to confirm the page (RTN).
3243	A Procedure Interrupt was received; no confirmation.
3244	Timeout - the remote FAX machine failed to respond.
3245	An unknown response has been received from the remote machine.
3300	The program encountered an I/O error in attempting to read a file for transmission. There was either a physical I/O error or a file with no data.
3301	GammaFax transmission-buffer underrun error.
3510	The 7960 did not provide service to the CP card in time for transaction to complete. This error indicates the host is underpowered or improperly configured to act as a facsimile host.
3910	Dial tone was not detected during dialing. Various factors can cause dialtone not to be reported beyond the simple case of a broken or mis-connected phone cord. The dialtone signal strength, frequency and pattern are all measured and must meet the software expectations.
3911	Ring detection did not complete successfully.
3912	No answer tone detected. The program is unable to classify incoming signals (i.e., there was no busy condition, no ring, no audio energy was detected, etc.).
3913	Carrier was not detected during image transfer.
3914	Quality test failed; phone-line quality poor.
3915	Quality test failed; phone-line quality poor.
3916	Command timeout; command not received.
3917	Command signal exceeded maximum value permitted.
3918	Command signal exceeded minimum value permitted.
3920	Protocol timeout.
3930	Answertone detected.

Display Codes - 7960 Controller (continued)

Error Codes	Message
3931	Busy tone detected. This error is reported when the busytone "on" time exceeds 300 milliseconds.
3932	Network congestion detected. This error is reported when the busy cadence (on/off tone test pattern) is less than 300 milliseconds "on". The user hears a very fast beeping on the line.
3933	No audio energy detected ("high and dry"). This might be the case with a totally hung dial, or possibly when "blind" dial is in use (dialtone detection has been suppressed) and the phone cord is damaged or disconnected.
3934	Voice response to call.
3935	Ringback detected. This error informs the user that a number was successfully reached and ringing at the remote end was reported. If there is no answer, the FAX machine could be offline (may be out of paper) and not responding.
3936	Ringback, no answer. In this situation, ringback was detected and then followed by a period of at least six seconds where there was no further ringing, no answertone, perhaps no audio energy. This message will most likely occur if a voice phone is called and a person answers, or if the call results in some type of operator intercept, or if the FAX machine number is not on an outside line and the PBX operator is unable to switch to the internal FAX line.
3940	Loop current was not detected after dialing. Any premature disconnect of the line will cause loop current to cease and the call is history at that point.
3941	Loop current failed during transmission/reception (the phone system may have disconnected).
3942	Loop current was detected prior to dialing (the handset was in use, for example).
3970	No answer received - busy or wrong number.
3980	Dial error - no open files. This error is reported when there is no point in placing the call, so the activity is canceled.

Troubleshooting

These Troubleshooting Tables are provided to help you correct some of the problems you may encounter while operating the system. The tables are arranged in order of operation: Image Retrieval, Image Viewing, Image Printing (Reader-Scanner), and Image Printing (Laser Printer). Problems are presented in the left column, the probable cause in the middle column, and the corrective action in the right column.

Image Retrieval (915, 916, 917, and 658)

Problem	Cause	Action
The Zoom Lens Assembly comes out when the Fiche Handler is pulled out.	The Upper Glass Flat presses against the Zoom Lens Assembly.	Install a Lens Lock. See Calling for Service, page DT-39.
The Zoom Lens Assembly won't pull out.	The Lens Lock is installed.	Press up on the Release Lever to release. See FILM TRANSPORT (Fiche), page FT-9.
It's too tedious locating an image on microfiche.	I have no means of quickly locating a specific frame.	Install a Fiche Grid Index. See Calling for Service, page DT-39.
The Fiche Grid Index does not match the magnification of the Zoom Lens.	The microfiche doesn't match the magnification of the Zoom Lens.	Match the Fiche Grid Index with the Zoom Lens Assembly installed. See FILM TRANSPORT (Fiche), page FT-4. Adjust the Zoom Wheel to match the magnification of the fiche. See FILM TRANSPORT (Fiche), page FT-4.
The Film Transport won't move side-to-side.	The 658 Film Transport is locked.	Disengage the Lateral Lock to allow side-to-side movement. See FILM TRANSPORT (Fiche), page FT-2.
The Film Transport moves side to side when winding or unwinding roll film.	The 658 Film Transport is unlocked.	Engage the Lateral Lock to prevent side-to-side movement. See FILM TRANSPORT (Fiche), page FT-5.

Troubleshooting (continued)**Image Retrieval (110 RFT)**


Problem	Cause	Action
The 110 RFT shuts off when the Film Speed Control is turned.	Film is misthreaded.	Rethread film correctly. See FILM TRANSPORT (Roll), page RF-2.
The Film Speed Control doesn't work.	The 110 RFT is not connected to the 7710 Reader-Scanner.	Connect the System Cable to the System Connector. See FILM TRANSPORT (Roll), page RF-8.
	The 7710 Power Switch is not in the "1" (ON) position.	Press the 7710 Power Switch to the "1" (ON) position.
	The Film End Switch is not actuated.	Turn the Manual Scan Control clockwise to tighten the film. Be sure the Film Take-Up Disc is pushed in for 16 mm film. See FILM TRANSPORT (Roll), page RF-2 and RF-3.
	The 110 RFT has an electro-mechanical problem.	See Calling for Service, page DT-39.
The film is skewed as it comes off the Film Spool.	The Film Spool is not all the way on the Film Spool Spindle.	Push the reel all the way in up to the stop. Turn the reel slightly to engage the square spindle if needed. See FILM TRANSPORT (Roll), page FT-2.
35 mm film doesn't fit within the Film Guides or Film Take-Up Reel.	The Film Guides and Film Take-Up Disc are pushed in for 16 mm film.	Pull out the Film Guides and reverse them and pull out the Film Take-Up Disc for 35 mm film. See FILM TRANSPORT (Roll), page FT-2.

Troubleshooting (continued)**Image Retrieval (210 CAT)**

Problem	Cause	Action
The Film Cartridge ejects automatically without any operator command.	The film broke or the trailer pulled off the film spool.	Remove film and repair. See FILM TRANSPORT (Cartridge), page CF-7.
	The film leader is too curled for the end is damaged.	Straighten the film leader or cut the end square.
The Film Cartridge doesn't eject.	The automatic cartridge eject function malfunctioned.	Push the blue Cartridge Release Lever to the rear. Press the Film Odometer Reset. If the automatic ejection function still fails, call for Service, page DT-39.
Film didn't load correctly.	The film leader is bent or curled.	Flatten the Film Leader or trim damaged section.
Film didn't load.	The Lower Glass Flat is not installed.	Reinstall the Lower Glass Flat and switch off the 7710. Then switch on again and reinsert the cartridge.
The Film Speed Control doesn't work.	The 210 CAT isn't connected to the Reader-Scanner.	Connect the System Cable to the System Connector. See FILM TRANSPORT (Cartridge), page CF-4.
	The Reader-Scanner Power Switch isn't in the "1" (ON) position.	Press the 7710 Power Switch to the "1" (ON) position.
	Electro-mechanical problem.	Record the Error Code and call for Service, page DT-39.

Troubleshooting (continued)

Image Retrieval (7756 Page Search)

Problem	Cause	Action
There is no display on the 7756 Page Search Display.	The Page Search Power Switch is in the "0" (OFF) position.	Switch ON the Page Search.
	The Page Search Power Cord isn't plugged in.	Connect the Page Search Power Cord to a power outlet.
	The Interconnection Harness to the 7710 Reader-Scanner isn't plugged in.	Connect the Interconnection Harness to the 7710.
The 7710 Page Search Display is difficult to read.	The Page Search Fuse is blown.	Call for Service. See page DT-39.
	The display characters are too light or too dark.	Adjust the Contrast Control. See OPERATING SEQUENCE, page OS-2.
The Page Search Display flashes a numerical error code.	There is a system error.	See 7756 Page Search, page PS-7.
The Page Search Display flashes  or scrambled symbols.	The Page Search Display is disabled.	Switch the 7756 Power Switch OFF, then ON. If the problem persists, call for Service. See page DT-39.
Page Search miscounts in a page search mode.	The Filter Glass and/or Plastic Window are dirty.	Clean the Filter Glass and Plastic Window. See PAGE SEARCH, page PS-44.
	The film is dirty.	Clean the film with a soft cloth.
	The wrong mode is selected.	Select the mode appropriate to the film. See PAGE SEARCH, page PS-2.
	Film Blips are not within specification.	Check film blips against the specifications. See PAGE SEARCH, page PS-55.
	Splices on the film are opaque.	Replace the opaque splices with clear splices.
	The first images on the film are too close to the leader.	Splice on a new leader.
	The leader is fogged (ANSI Cartridge).	Cut off the fogged end of the leader or replace it with a new leader.
	The Blip Sensors are out of adjustment.	Call for Service, page DT-39.

Troubleshooting (continued)**Image Viewing (7710 Reader-Scanner)**

Problem	Cause	Action
The Viewing Screen image is too small or too large.	The Zoom Lens is not adjusted to the correct magnification.	Adjust the Zoom Lens so the image on the Viewing Screen is within the fiducial marks. See OPERATING SEQUENCE, page OS-5.
	The wrong Zoom Lens is installed.	Select a Zoom Lens having the correct magnification range. See READER-SCANNER, page RS-16.
The Viewing Screen image is blurred.	The Zoom Lens is out of focus.	Adjust the green Zoom Wheel. See OPERATING SEQUENCE, page OS-5.
	The Lower Glass Flat is not correctly installed.	Remove the Lower Glass Flat and reinstall. See FILM TRANSPORT, page FT-6.
The Viewing Screen image is turned.	The Image Rotation Wheel isn't adjusted correctly.	Adjust the Image Rotation Wheel. See OPERATING SEQUENCE, page OS-5.
The Viewing Screen image is spotted or streaked.	The Glass Flats are dirty.	Clean the Glass Flats. See FILM TRANSPORT, page FT-6.
The Zoom Lens Assembly doesn't zoom at 6.5X to 14X magnification.	The Prism Assembly is in the wrong position.	Adjust the position of the Prism Assembly. See READER-SCANNER, page RS-16.

Troubleshooting (continued)**Image Viewing (7710 Reader-Scanner)** (continued)

Problem	Cause	Action
The Viewing Screen image has shadows in the corners from 6.5X to 14X magnification.	There is inadequate light distribution.	Install an Adjustable Condenser Lens Kit. See Calling for Service, page DT-39.
	The Fresnel Lens Adjustment handle is not in the correct position.	Move the Fresnel Lens Adjustment Handle to match the Zoom Lens Assembly installed. See OPERATING SEQUENCE, page OS-5.
The 7710 Scanner Display is difficult to read.	The characters are too light or too dark.	Adjust the Contrast Control. See OPERATING SEQUENCE, page OS-2.

Troubleshooting (continued)**Image Printing (7710 Reader-Scanner)**

Problem	Cause	Action
The print is too small or too large.	The Zoom Lens isn't adjusted to the correct magnification.	Adjust the Zoom Lens so the image on the Viewing Screen is within the fiducial marks. See OPERATING SEQUENCE, page OS-5.
	The wrong Zoom Lens is installed.	Select a Zoom Lens having the correct magnification range. See READER-SCANNER, page RS-16.
The print is spotted or streaked.	The Glass Flats are dirty.	Clean the Glass Flats. See FILM TRANSPORT, page CF-2 or CF-6.
The print has shadows in the corners from 6.5X to 14X magnification.	There is inadequate light distribution because the Fresnel Lens Adjustment Handle isn't in the correct position.	Move the Fresnel Lens Adjustment Handle to match the Zoom Lens Assembly installed. See OPERATING SEQUENCE, page OS-5.
The print is skewed.	The 7710 Viewing Screen image is skewed.	Turn the 7710 Image Rotation Wheel. See OPERATING SEQUENCE, page OS-5.
The print is black with white characters.	The 7710 film polarity parameter is not the same as the film displayed on the Viewing Screen.	Set the 7710 film polarity parameter to match the film displayed. See READER-SCANNER, page RS-2.

Troubleshooting (continued)

Image Printing (7941 Laser Printer)

Problem	Cause	Action
The Power Indicator doesn't light when the Power Switch is pressed to "1" (ON).	The Power Cord isn't plugged in.	Plug in the Power Cord.
	The printer Fuse is blown.	Replace the Fuse. See LASER PRINTER, page LP-22.
The On-Line Indicator doesn't light.	The printer is off-line.	Press the ON-Line Key.
The print is blank.	The Charge Corona is defective.	Replace the Charge Corona. See LASER PRINTER, page LP-11.
The print is black.	The Charge Corona isn't seated or is defective.	Reseat or replace the Charge Corona. See LASER PRINTER, page LP-11.
	The Transfer Corona isn't seated or is defective.	Reseat or replace the Transfer Corona. See LASER PRINTER, page LP-11.
	The OPC Cartridge isn't seated.	Reseat the OPC Cartridge. See LASER PRINTER, page LP-9.
The print is too light.	The OPC Cartridge isn't seated.	Reseat the OPC Cartridge. See LASER PRINTER, page LP-9.
	The OPC Cartridge is wornout.	Replace the OPC Cartridge. See LASER PRINTER, page LP-9.
	The OPC Cartridge was exposed to too much light.	Replace the OPC Cartridge. See LASER PRINTER, Page LP-9.
	The Charge Corona is defective.	Replace the Charge Corona. See LASER PRINTER, page LP-11.
	The Separation Pawls are dirty.	Clean Separation Pawls. See LASER PRINTER, page LP-15.

Troubleshooting (continued)**Image Printing (7941 Laser Printer)** (continued)

Problem	Cause	Action
Black spots on the printed face of paper.	The Cleaning Lamp is dirty.	Clean the Cleaning Lamp. See LASER PRINTER, page LP-11.
	The Cleaning Pad is dirty.	Replace the Cleaning Pad. See LASER PRINTER, page LP-4.
	The OPC Cartridge is defective.	Replace the OPC Cartridge. See LASER PRINTER, page LP-9.
	The Charge Corona is defective.	Replace the Charge Corona. See LASER PRINTER, page LP-11.
	The Transfer Corona is defective.	Replace the Transfer Corona. See LASER PRINTER, page LP-11.
A "ghost" of the previous image appears on the print.	The Cleaning Lamp is dirty.	Clean the Cleaning Lamp. See LASER PRINTER, page LP-11.
	The OPC Cartridge is defective.	Replace the OPC Cartridge. See LASER PRINTER, page LP-9.
The print has dirty margins.	The Cleaning Lamp is dirty.	Clean the Cleaning Lamp. See LASER PRINTER, page LP-11.
Streaks on leading edge of print.	The Cleaning Lamp is dirty.	Clean the Cleaning Lamp. See LASER PRINTER, page LP-11.
	The Cleaning Pad is dirty.	Replace the Cleaning Pad. See LASER PRINTER, page LP-4.
	The OPC Cartridge is defective.	Replace the OPC Cartridge. See LASER PRINTER, page LP-9.
	The Charge Corona is defective.	Replace the Charge Corona. See LASER PRINTER, page LP-11.
	The Transfer Corona is defective.	Replace the Transfer Corona. See LASER PRINTER, page LP-11.
	The Shield Lens is defective.	Replace the Shield Lens. See LASER PRINTER, page LP-11.

Troubleshooting (continued)**Image Printing (7941 Laser Printer) (continued)**

Problem	Cause	Action
The print is skewed.	The Paper Tray is not installed correctly. The Paper Guide isn't flush against the paper stack.	Reinstall the Paper Tray. See LASER PRINTER, page LP-2. Push the Paper Guide against the paper stack. See LASER PRINTER, page LP-2.
The print is blurred.	The Shield Lens is dirty.	Replace the Shield Lens. See LASER PRINTER, page LP-11.
Vertical black lines appear on the white area of the print.	The Shield Lens is dirty.	Replace the Shield Lens. See LASER PRINTER, Page LP-11.
Stripes appear at the edge of the printed pages.	The Separation Pawls are dirty.	Clean the Separation Pawls. See LASER PRINTER, page LP-15.
Vertical white lines appear on the image area of the print.	The Shield Lens is dirty. The Charge Corona is defective.	Replace the Shield Lens. See LASER PRINTER, page LP-11. Replace the Charge Corona. See LASER PRINTER, page LP-11.
Black lines emanate from the printed image. The Shield Lens is dirty.	The Shield Lens is dirty. The Cleaning Pad is dirty.	Replace the Shield Lens. See LASER PRINTER, page LP-11. Replace the Cleaning Pad. See LASER PRINTER, page LP-4.
There are too frequent or constant paper jams.	Paper is not within 16 to 24 pounds specification. The Separation Pawls are dirty.	Use 3M 696 Type Bond Paper (78-6969-6135-4). Clean the Separation Pawls. See LASER PRINTER, page LP-15.
Frequent feeding of 2 or more sheets of paper at one time occur.		See Calling for Service, page DT-39.

Operator Tests

Version

Knowing the Version Level of your firmware and the mode of your system is important for diagnosis in the event your system has a malfunction. Your system will always be configured to "Reader-Scanner" mode.

1. Press **TEST** on the 7710 Keyboard.

```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

2. Press **3**.

```
-----Test Mode-----  
Test = Version  
Enter 1 thru 9
```

3. Press **ENTER**.

```
Ready  
Version X.XX  
Reader/Scanner Mode
```

Printed Test Pattern (Printer Mode only)

Note

A printed test pattern will not be made if in the Reader/Scanner Mode.

1. Press **TEST** on the 7710 Keyboard.

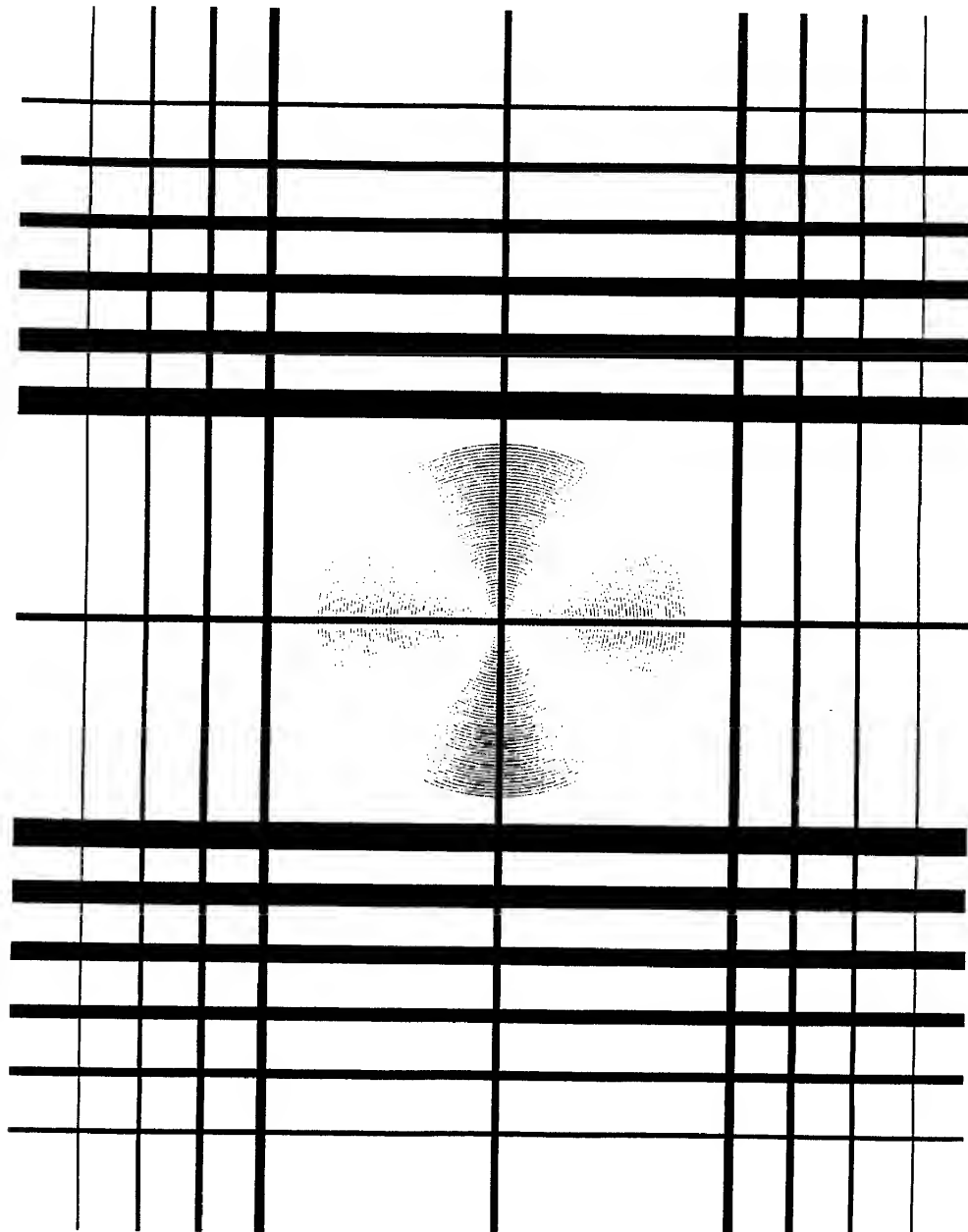
```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

2. Press **4**.

```
-----Test Mode-----  
Test = Test Pattern  
Enter 1 thru 9
```

3. Press **ENTER**. The Test Pattern shown on the next page will be printed by the 7941 Laser Printer.

Test Pattern



Note

The sample shown above is at 300 dpi. A diagonal line from top right to lower left indicates the pattern is printed at 200 dpi.

Operator Tests (continued)**FAXed Test Pattern**

The Test Pattern shown on the previous page can be FAXed to a remote location for analysis. If asked to FAX a Test Pattern, follow these instructions:

1. Select "Transfer Image from 7710" from the Main Menu of the 7960 Controller (see tabbed section "OPERATING SEQUENCE", page OS-7, and press **Enter** on the Controller Keyboard.

2. Press **TEST** on the 7710 Keyboard.

```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

3. Press **4**.

```
-----Test Mode-----  
Test = Test Pattern  
Enter 1 thru 9
```

4. Press **ENTER**. The Test Pattern will transfer to the 7960 Controller. It will not be printed by the 7941 Laser Printer.
5. Press **FXEND** on the 7710 Keyboard or **Esc** on the 7960 Controller Keyboard to return to the Main Menu.
6. Press **Enter** on the Controller Keyboard activating the "Create FAX Cover Sheet" option from the Main Menu.
7. Select the location of the receiver from the Receiver Phone List or complete the Receiver Field of the Cover Sheet and press **F8** to send the FAX. The Test Pattern will be FAXed to the remote location.

Reset the 7710

Press **TEST** on the 7710 Keyboard.

```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

2. Press **7**.

```
-----Test Mode-----  
Test = Reset 7710  
Enter 1 thru 9
```

3. Press **ENTER**. The 7710 will be reset from a previous error condition.

Scan Count

1. Press **TEST** on the 7710 Keyboard.

```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

2. Press **8**.

```
-----Test Mode-----  
Test = Scan Count  
Enter 1 thru 9
```

3. Press **ENTER**.

```
Ready  
Scan Count  
XX
```

Printer Test

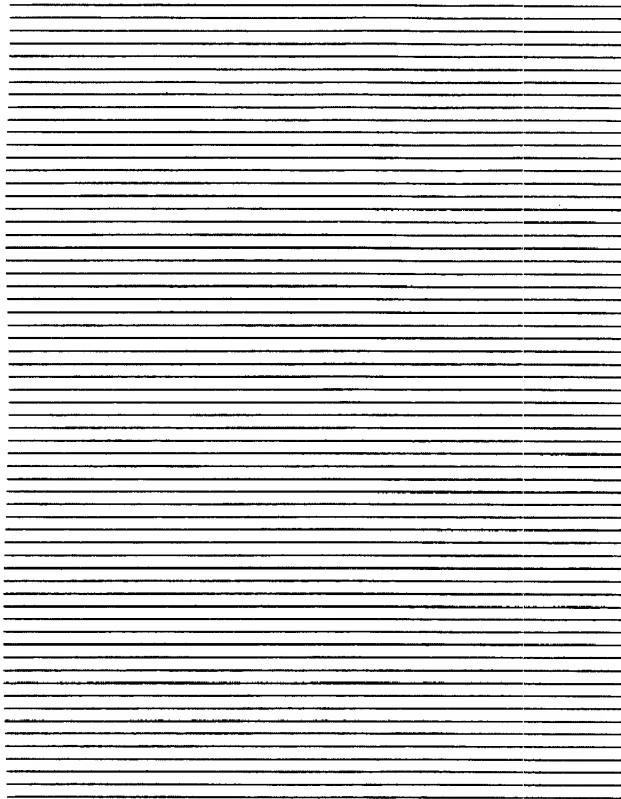
1. Having power applied to the 7941 Laser Printer, press the printer On-Line Switch to Off-Line (The On-Line Indicator extinguishes).
2. Press the Test Switch at the rear of the printer. A test sheet of equally spaced horizontal lines will be printed (see below).

Note

If you hold the Test Switch in for more than 1-1/2 seconds, the printer will continue to print. To stop printing, press the Test Switch again.

3. Press the On-Line Switch to the On-Line condition (the On-Line Indicator lights).

7941 Laser Printer Test Sheet (reduced from 8-1/2 in. by 11 in.)



Calling For Service

If you are unable to correct the image retrieval, image viewing, or image printing problem you are experiencing by referring to the Display Codes and Messages, pages DT-23 through DT-17, or Troubleshooting Tables, pages DT-24 through DT-33, you need to call for authorized service.

Before you call:

1. Jot down the telephone number, the model number, version level, and serial number of the faulty machine. For your convenience this information is provided on a label placed in a conspicuous location on the applicable machine.
2. Write down what you were doing when the system failed. Is the problem related to film loading, image retrieval, image viewing, or image printing? Were there any new sounds made before the system failed? What other symptoms did you notice? Be as specific as you can.
3. Record what error codes or messages are displayed on the faulty machine.

Call for service:

1. Call the 3M National Service Center (1-800-328-5901).
2. Give the Model Number, version level, and Serial Number of the faulty machine.
3. Summarize the problem you are experiencing with the faulty machine: any error symbols, error codes or messages, and what you have done to try to clear the problem. Indicate whether the problem area is film loading, image retrieval, image viewing, or image printing.

Note

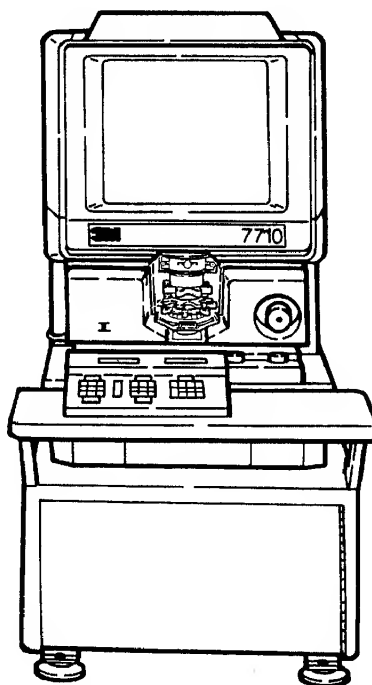
A modem* may be installed on your 7710 system for remote diagnostics to greatly reduce your "downtime". The modem may have a dedicated line or use a shared line. If the Modem does not use a dedicated line, follow these instructions and the instructions given by phone.

- a. Unplug the phone line from the telephone company's wall jack that leads to the "Wall" Jack of the 7960, and, in its place, plug in the phone line that leads from the "Line" Jack of the Modem.
- b. Give the telephone number of the FAX line you plugged into the modem to the person at the remote location and wait for the dial tone and answer tone (if the Volume Control of the Modem is turned to an audible level).
- c. Stay on the line and verify events the system may do by commands given from the remote location. The 7710 can now be controlled and analyzed by the remote location.
- d. You may be asked various questions to reconstruct your malfunction for diagnosis. Your system parameters will then be checked and certain tests performed. The error may be cleared immediately or a replacement component may be ordered and a Service Technician dispatched.
- e. After the call, if the Modem does not have a dedicated line, unplug the Modem phone line from the wall jack and plug in the phone line from the 7960 Controller.

* The recommended modem, MT224EH manufactured by Multi-Tech Systems, Inc., can be purchased through 3M or your local Multi-Tech distributor.

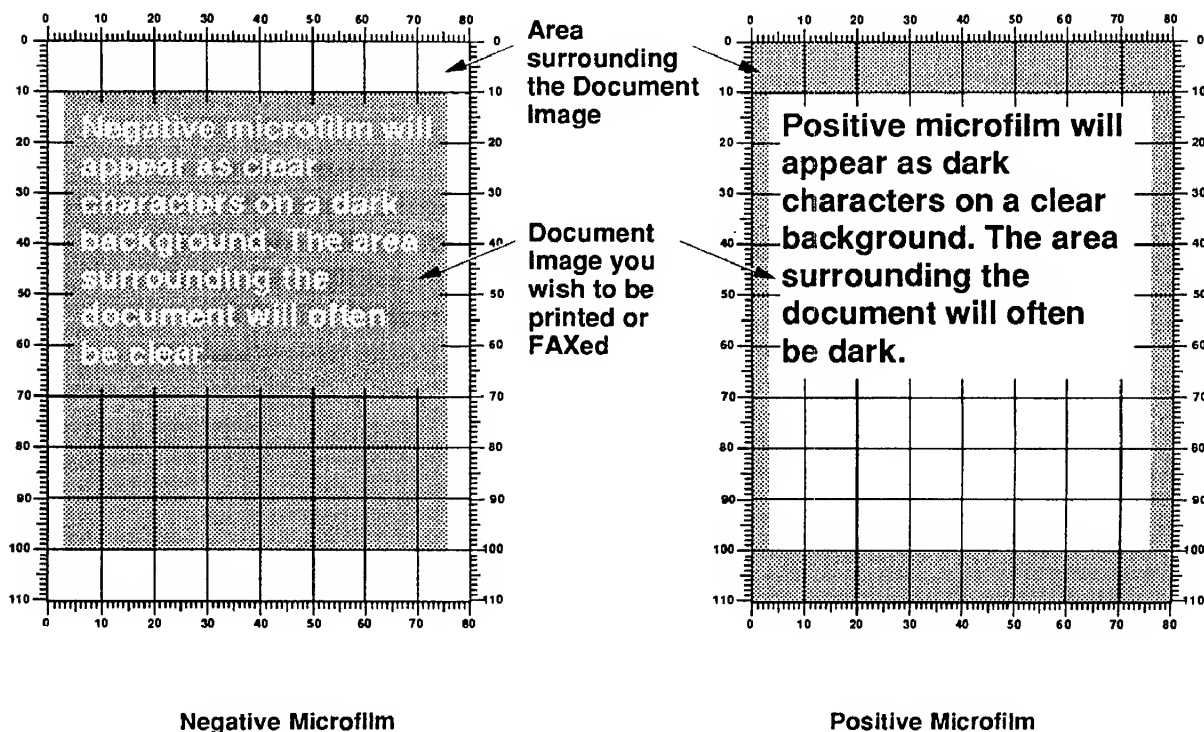
Table Of Contents

Changing the Film Polarity Parameter	RS-2
Changing the Number of Prints	RS-4
Setting the Paper Size and Image Resolution	RS-5
Changing the Threshold and Gain	RS-6
Changing the Exposure	RS-8
Setting the Mask Parameters	RS-9
To Turn Masking Off	RS-9
To Use Automatic Masking	RS-11
To Use Manual Masking	RS-16
To Use Special/Top Masking	RS-20
To Use Special/Left Masking	RS-22
Setting the Photo Parameters	RS-30
Changing a Parameter Setting for One Print or FAX Cycle	RS-32
Resetting a Parameter to the Default Setting	RS-33
Changing a Power On Default Parameter Setting	RS-34
Storing and Retrieving Parameter Macros	RS-35
Replacing the Projection Lamp	RS-37
Changing the Zoom Lens Assembly	RS-40
Cleaning the Zoom Lens	RS-41
Specifications	RS-42
7710 Reader-Scanner Options	RS-43



Changing the Film Polarity Parameter

The **FILM** Key on the 7710 Scanner Keyboard is used to set the parameter for film polarity. Once the polarity is set, it usually is not set again unless you use a mix of negative and positive microfilms. Negative microfilm is characterized as having clear characters on a dark document background. Positive microfilm is characterized as having dark characters on a clear document background. Whenever you change the polarity parameter you should always make a proof copy from the 7941 Laser Printer to ensure prints and FAXed copies are positive. Positive prints have black characters on a white background. The film polarity parameter can be checked by pressing **PMTR**, reading the current type of polarity on the Scanner Display, and pressing **ENTER** to return to ready.



Viewing Screen Image

1. Press the **FILM** Key on the 7710 Scanner Keyboard to set the polarity parameter for the type of film displayed on the Viewing Screen. One of two possible screens will appear on the Scanner Display:

Film=0 (Negative)	OR	Film=1 (Positive)
Enter 0 for negative,		Enter 0 for negative,
Enter 1 for positive		Enter 1 for positive

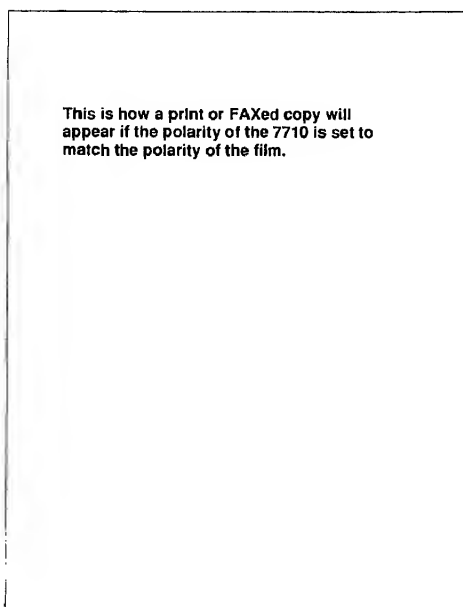
Changing the Film Polarity Parameter (continued)

To set the Polarity Parameter for Negative Film:

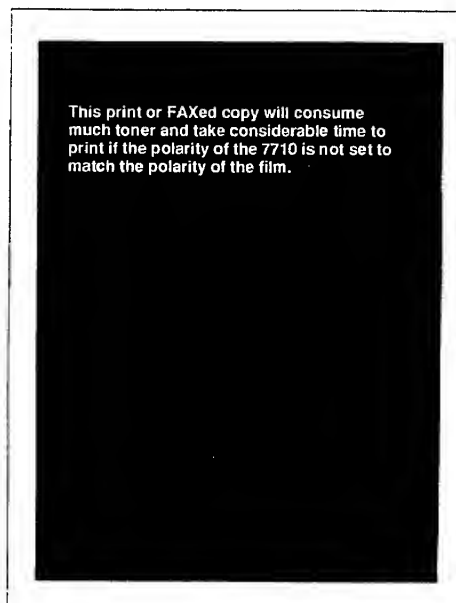
- 2a. Press the **0** and **ENTER** Keys on the 7710 Scanner Keyboard if the image displayed on the Viewing Screen has clear characters on a dark background. Continue with Step 3.

To set the Polarity Parameter for Positive Film:

- 2b. If the image displayed on the Viewing Screen has dark characters on a clear background, press the **1** and **ENTER** Key on the 7710 Scanner Keyboard.
3. Press the **PRINT** Key on the 7710 Scanner Keyboard. If the print is negative (black background with white text), repeat Steps 1 and 2.



Correct



Wrong

Print or FAXed Copy

Note

The parameter value now entered will remain until the 7710 is switched off. To change the value for just one print or FAX cycle, see Changing a Parameter Setting for One Print or FAX cycle, page RS-32. To reset the parameter to the default setting, see Resetting a Parameter to the Default Setting, page RS-33. To change the default value, see Changing a Power On Default Parameter Setting, page RS-34.

Changing the Number of Prints

The factory default number of prints is 1 each time the **PRINT** Key is pressed. You can make as many as 9 prints each time the **PRINT** Key is pressed.

To make multiple prints of the same image:

1. Press the **COPY#** Key on the Reader-Scanner Keyboard.

No. of copies = 1
Enter 1 thru 9

2. Key in any number from 1 to 9 and press **ENTER**.
3. Press **PRINT**. The number of prints entered in Step 2 will be printed by the 7940 Laser Printer.

Note

The parameter value now entered will remain until the 7710 is switched off. To change the value for just one print or FAX cycle, see *Changing a Parameter Setting for One Print or FAX Cycle*, page RS-32. To reset the parameter to the default setting, see *Resetting a Parameter to the Default Setting*, page RS-33. To change the default value, see *Changing a Power On Default Parameter Setting*, Page RS-34.

Setting the Paper Size and Image Resolution

The **SIZE/RES** Key on the 7710 Scanner Keyboard has a dual function. It is used to set the parameter for the size of print generated by the Laser Printer and to set the scanning resolution for printing. Resolution for FAXing images is not affected. Print size can be set to Letter (8-1/2 in. x 11 in.) or European A4 (210 mm x 297 mm). Scanning resolution can be set to 200 dpi or 300 dpi (dots per inch). The fewer dots per inch the faster the scan and transfer, but there is some loss of image quality. Document size is factory set for Letter (resolution 200 dpi). Document size can only be changed to A4 if your Service Technician enables the parameter. The document size selected must match the document size of the printer.

Note

If no changes are allowed, press **ENTER** to continue.

The following instructions are only for those systems having the parameter enabled for both Letter and A4. Otherwise, the display will simply indicate the document size and not allow a change.

1. Press the **SIZE/RES** Key on the 7710 Scanner Keyboard to set the print size parameter or scanning resolution.

Doc Size= 1 (Letter)	OR	Doc Size= 2 (A4)
Enter 1 or 2		Enter 1 or 2

2. Go on to Step 3 for changing the print size. Press **Enter** and go to Step 5 to change the scanning resolution.

Print Size

3. Press **1** and **ENTER** to set the print size to Letter (8-1/2 in. x 11 in.) or **2** and **ENTER** to set the print size to European A4 (210 mm x 297 mm).

Doc Size= Letter		Doc Size= A4
Resolution= 1 (200)	OR	Resolution= 1 (200)
Enter 1 or 2		Enter 1 or 2

Image Resolution

4. Press **1** and **ENTER** to set the resolution to 200 dpi or **2** and **ENTER** to set the resolution to 300 dpi.

Note

The parameter value now entered will remain in effect until the 7710 is switched off. To change the value for one print or FAX cycle, see Changing a Parameter Setting for One Print or FAX Cycle, page RS-32. To reset the parameter to the default setting, see Resetting a Parameter to the Default Setting, page RS-33. To change the default value, see Changing a Power On Default Parameter Setting, page RS-34.

Changing the Threshold and Gain

The 7710 Reader-Scanner can dramatically improve the quality of prints and FAXed copies from poor microfilm images. The Step Test can help you determine the optimum threshold, gain, and/or exposure parameter values.

1. Position the image so that a representative section of text and background is displayed in the upper left corner of the Viewing Screen grid. (This portion of the screen image will be reproduced 16 times.)
2. Press **TEST** to display the test mode on the Scanner Display.

```
-----Test Mode-----  
Test = ?  
Enter 1 thru 9
```

3. Press **2** to select a step test having 16 combinations (4 x 4 grid) of threshold and gain. Exposure is the same for each image.

```
-----Test Mode-----  
Test = Step Test 2X  
Enter 1 thru 9
```

4. Press **ENTER** to print a grid of images from the laser printer. See the example on the next page.

```
---Step Test Mode---  
Scanning  
Ready  
Print 1 of 1
```

Note

If all images are either too light or too dark, change the exposure parameter value. See Changing the Exposure, page RS-8 and repeat Steps 1 through 4.

5. From the test sheet, select the image having the sharpest image and least background clutter.
6. Refer to the number grid on the next page, and select the grid position that corresponds with the image selected in Step 5. The two-digit number in this grid position indicates the threshold and gain values that apply to the image you selected.
7. Press **MDIIP** to display the current parameter settings on the Scanner Display.

```
MDIIP = 44 (Initial default value)  
Enter value
```

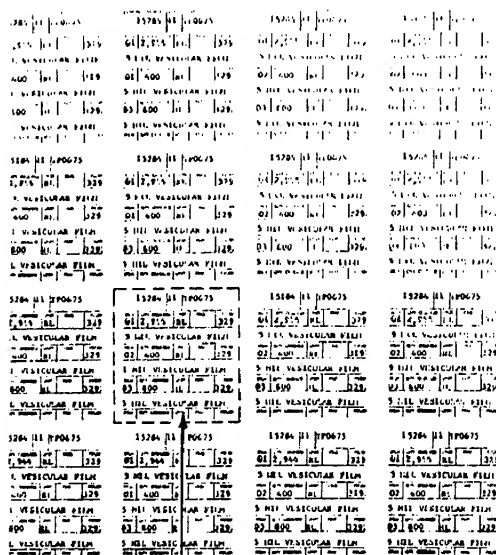
8. If the values shown differ from the selected step test values, enter the new values and press **ENTER**. The first value is threshold. the second value is gain.

Note

The parameter value now entered will remain until the 7710 is switched off. To change the value for just one print or FAX cycle, see Changing a Parameter Setting for One Print or FAX cycle, page RS-32. To reset the parameter to the default setting, see Resetting a Parameter to the Default Setting page RS-33. To change the default value, see Changing a Power On Default Parameter Setting, page RS-34.

Changing the Threshold and Gain (continued)

Step Test Image Grid



Best Image

Threshold/Gain Values Grid

		Threshold							
		2	(3)	4	(5)	6	(7)	8	
Gain	2	22		42		62		82	
	(3)								
	4	26		44		64		86	
	(5)								
	6	26		46		66		86	
	(7)								
	8	28		48		68		88	

MDHP = XY

Threshold (4) and gain (6)
values for best image

This figure is an example of a 4 X 4 Step Test. Note how the characters faded in the images at the upper right while background clutter increases toward the lower left. Select the image having the sharpest characters and least amount of background clutter. Let's say the 3rd figure down, 2nd from the left is the best image.

This figure represents an imaginary grid showing threshold and gain values for the corresponding frames on the Step Test Image Grid. The grid coordinates for the best image selected are in this case 4 for threshold and 6 for gain. If the best image area on the test grid overlaps particular frames, you can use odd numbers (3) and (5), for example, to select "in-between values".

Note

Changing threshold lightens or darkens the background.
 Changing gain lightens or darkens the image.
 Changing the exposure lightens or darkens both the background and image.

Changing the Exposure

To adjust the exposure of the printed image from the local laser printer:

1. From the Main Menu of the 7960 Controller, highlight "Transfer Images from 7710" and press **Enter**.
2. Press **PRINT** to scan the image on the Viewing Screen and print a copy from the laser printer. The scanning status is displayed on the Scanner Display:

```
----Print Mode----
Scanning
----Ready----
Print 1 of 1
```

3. If the image is too light or too dark, press **XPOSE** to display the exposure setup menu on the Scanner Display:

```
Exposure= 0 (Manual)           Exposure= 1 (Auto)
Enter 0 for manual             Enter 0 for manual
1 for auto                     1 for auto
```

4. If Exposure = 0 (Manual) and you want automatic exposure, press **1**:
If Exposure = 1 (Auto) and you want to manually control exposure, press **0**:

```
Exposure= 1 (Auto)           Exposure= 0 (Manual)
Enter 0 for manual           Enter 0 for manual
1 for auto                   1 for auto
```

5. Press **ENTER**.

```
Exposure= Auto               Exposure= Manual
Current value = X            Current value = X
Enter 1 thru 4               Enter 1 thru 4
```

6. Enter a new parameter setting from 1 to 4 (1 is lightest image, 4 is darkest).

```
Exposure= Manual             Exposure= Auto
Current Value = Y            Current Value = Y
Enter 1 thru 4               Enter 1 thru 4
```

7. Press **ENTER**.

Ready

Note

The parameter value now entered will remain until the 7710 is switched off. To change the value for just one print or FAX cycle, see *Changing a Parameter Setting for One Print or FAX Cycle*, page RS-32. To reset the parameter to the default setting, see *Resetting a Parameter to the Default Setting*, page RS-33. To change the default value, see *Changing a Power ON Default Parameter Setting*, page RS-34.

Note

If you select Autoexpose and you wish to mask a document image less than 8-1/2 in. x 11 in., see page RS-20 to avoid incorrect masking. Always make a proof copy before FAXing important documents.

Setting the Mask Parameters

You can use the mask parameters to mask off the area surrounding a microfilm image, or to selectively mask off areas. Masking significantly reduces the toner used to develop a print and the time to transmit a FAX. Masking will not appear on the Viewing Screen and will only be apparent on a printed or FAXed copy. Always make a proof copy from the Laser Printer before FAXing important documents.

Three types of masking are available: manual, automatic, and special. Use the manual masking mode when you wish to mask an area within a document such as a newspaper article. Use manual masking also when the screen image is as large as possible, but two or more complete documents and zero or more partial documents are displayed, and you wish to print or FAX only a single document. Auto-masking takes less time to set mask parameters than manual, and is usually set just once a session. Auto-masking is recommended for printing or FAXing critical documents. Use Special/T Masking when you wish to include a block of information at the top of a document along with a masked partial image. Use Special/L Masking when you wish to include a block of information at the left of a document along with a masked partial image.

Having adjusted the document image (see tabbed section "OPERATING SEQUENCE, pages OS-4 through OS-6) as large as possible and centered within the Viewing Screen:

1. Press **MASK** to display the mask option setup menu on the Scanner Display. One of five possible displays will appear:

Masking= 0 (Off)	OR	Masking=1 (Auto)	OR	Masking= 2 (Manual)
Enter 0 thru 4		Enter 0 thru 4		Enter 0 thru 4
See 2a., below.		See 2b., below.		See 2c., below.
Masking= 3 (Special/T)	OR			Masking= 4 (Special/L)
Enter 0 thru 4				Enter 0 thru 4
See 2e., page RS- .				See 2f., page RS- .

Note: Press **CANCEL** if no change is needed.

To Turn Masking Off:

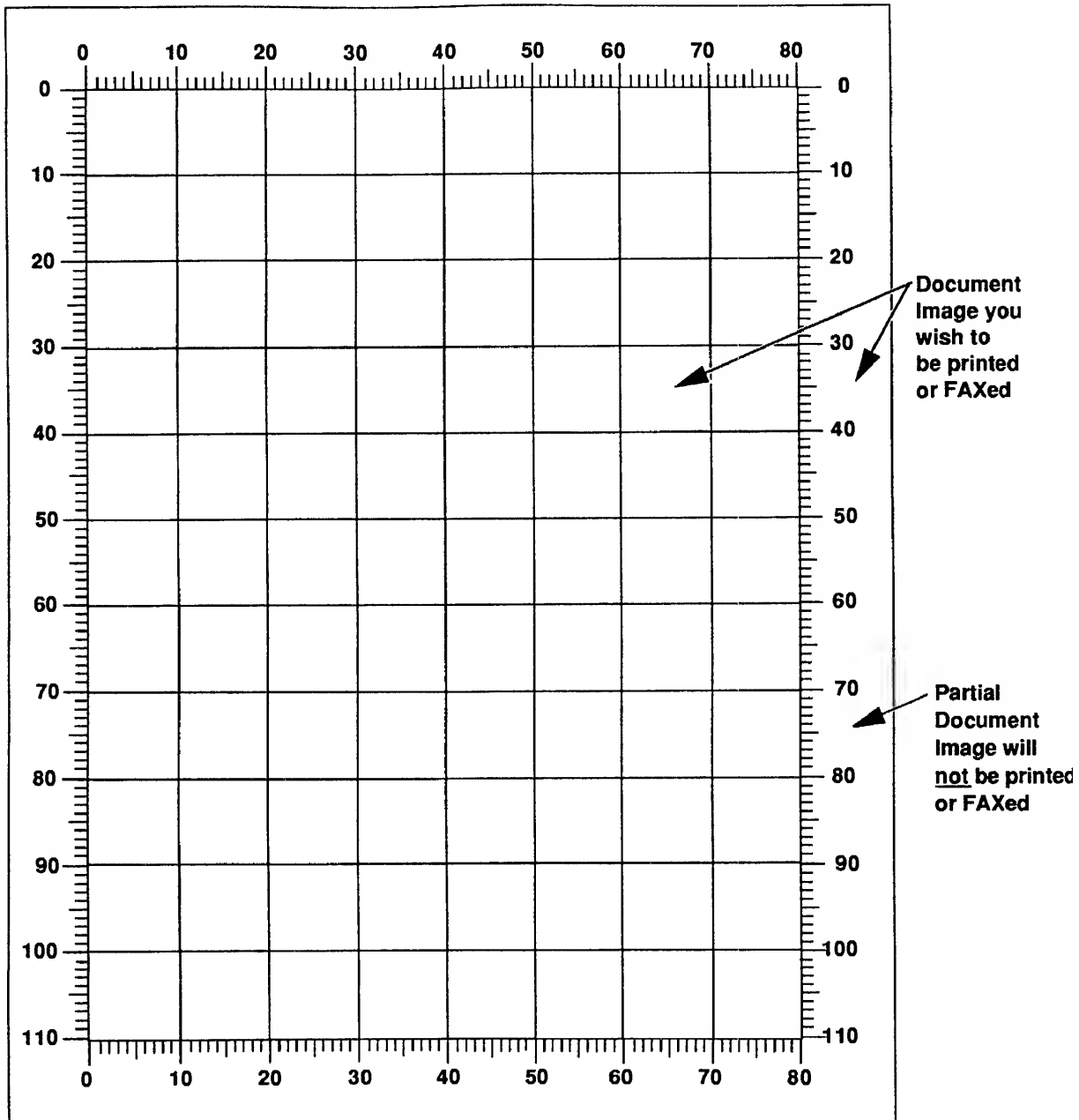
- 2a. Press **0** and **ENTER** to switch off the masking option. Press **PRINT** for a hard copy or proof before FAXing.

Note

Always highlight "Transfer Images from 7710" from 7960 Main Menu before pressing **PRINT**.

Note

Always make a proof copy from the Laser Printer before FAXing important documents. Automasking may be exposure-sensitive with poor quality microfilm. You may have to adjust exposure to achieve the desired masking results. (Manual exposure if properly set, will ensure against unexpected masking.) Centering the document image is also good practice.

Setting the Mask Parameters (continued)

If the document image is outside the grid coordinates, the image outside the coordinates will be "clipped" in the resulting print or FAXed copy. Use the "Off" (0) masking option for this case.

The command string for this example is: **MASK, 0, ENTER.**

Setting the Mask Parameters (continued)

To Use Automatic Masking:

2b. Press **1** and **ENTER** for automatic masking. Setup for automasking is simple. Two options are available:

Masking= 1 (Auto)
Mask Mode: 0 (Single) OR,
Enter 0, 1

Masking= 1 (Auto)
Mask Mode: 1 (Multi)
Enter 0, 1

Single Document Image Masking

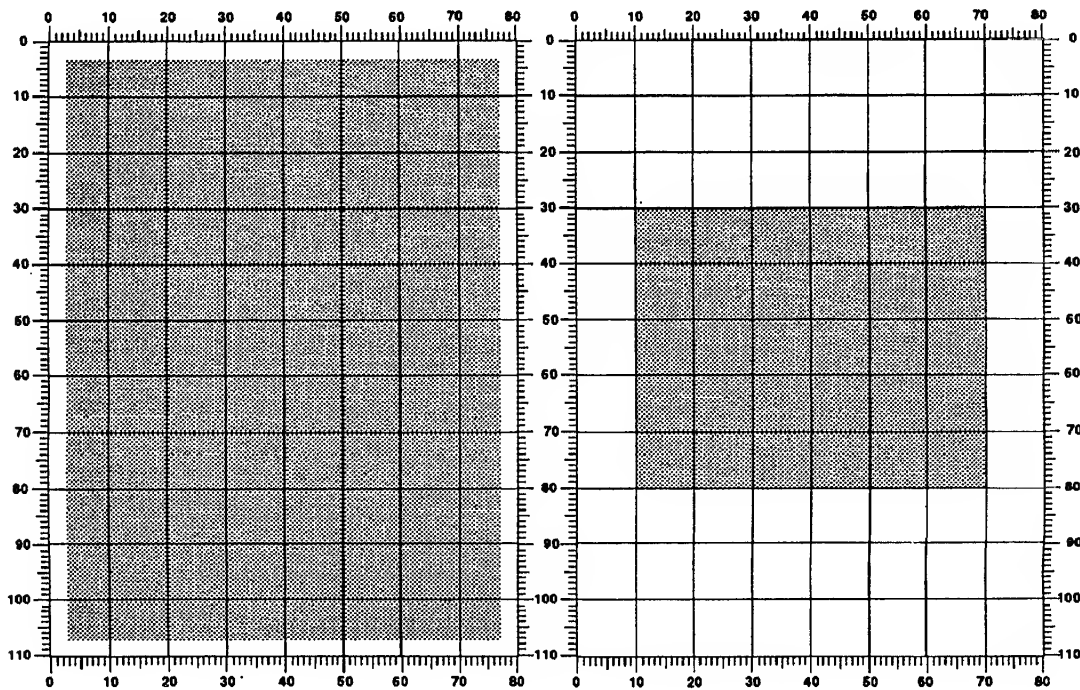
Press **0** and **ENTER** if a single complete document image is displayed on the Viewing Screen and there are no partial documents. (See illustration below.) Press **PRINT** for a hardcopy or proof before FAXing. The document displayed on the Viewing Screen will be printed or FAXed but not the area surrounding the document.

Multiple Document Image Masking

Press **1** and **ENTER** if more than one complete document is displayed on the viewing screen or there are partial documents displayed as well. Press **PRINT** for a hard copy or proof before FAXing. The documents displayed on the Viewing Screen will be printed or FAXed but not the area surrounding the document, or any partial documents.

Single Document Image

A single document image is defined as one complete document image vertically or horizontally displayed within the coordinates of the Viewing Screen. No partial documents are displayed. Select "0" (Single).

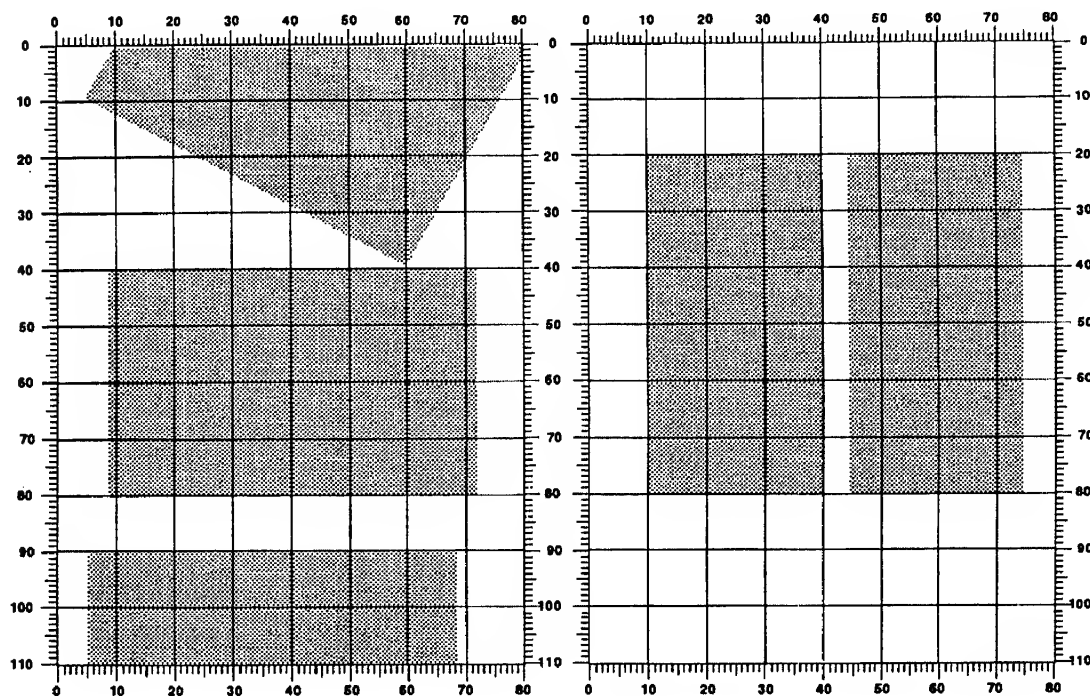


Single Document Images

Setting the Mask Parameters (continued)

Multiple Document Image

A multiple document image is defined as one or more complete document images displayed vertically or horizontally within the coordinates of the Viewing Screen. Zero or more partial document images may be displayed. Select "1" (Multi). Only documents with all four sides within the coordinates will be printed or FAXed.

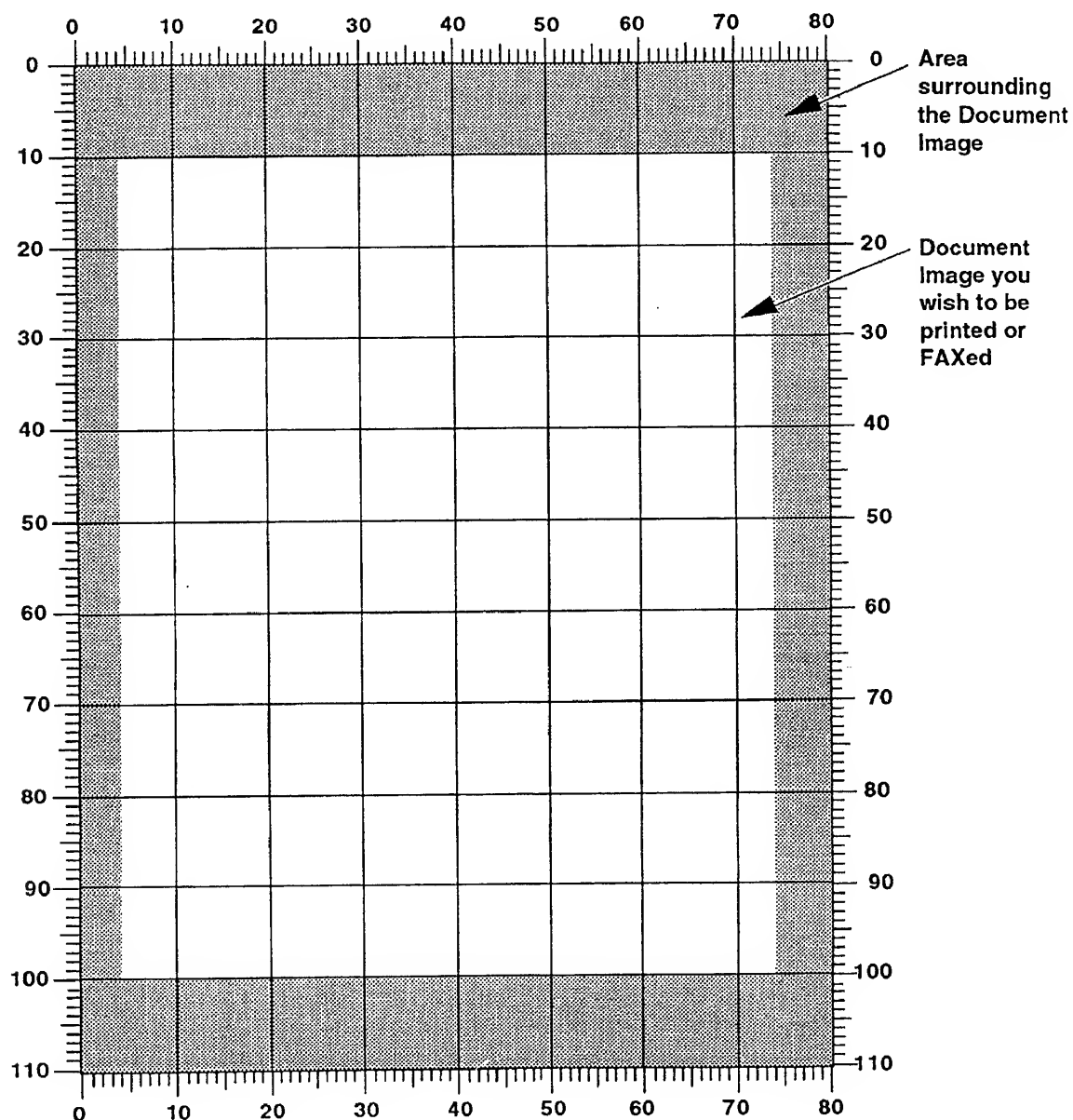


Multiple Document Images

Note

The document image must be placed horizontally within the "26" and "54" Horizontal Fiducial Marks but anywhere within the "0" and "105" ("117" International) Vertical Fiducial Marks. See page RS-25 for illustration. The shortest scan time is achieved when the document image is centered on the Viewing Screen.

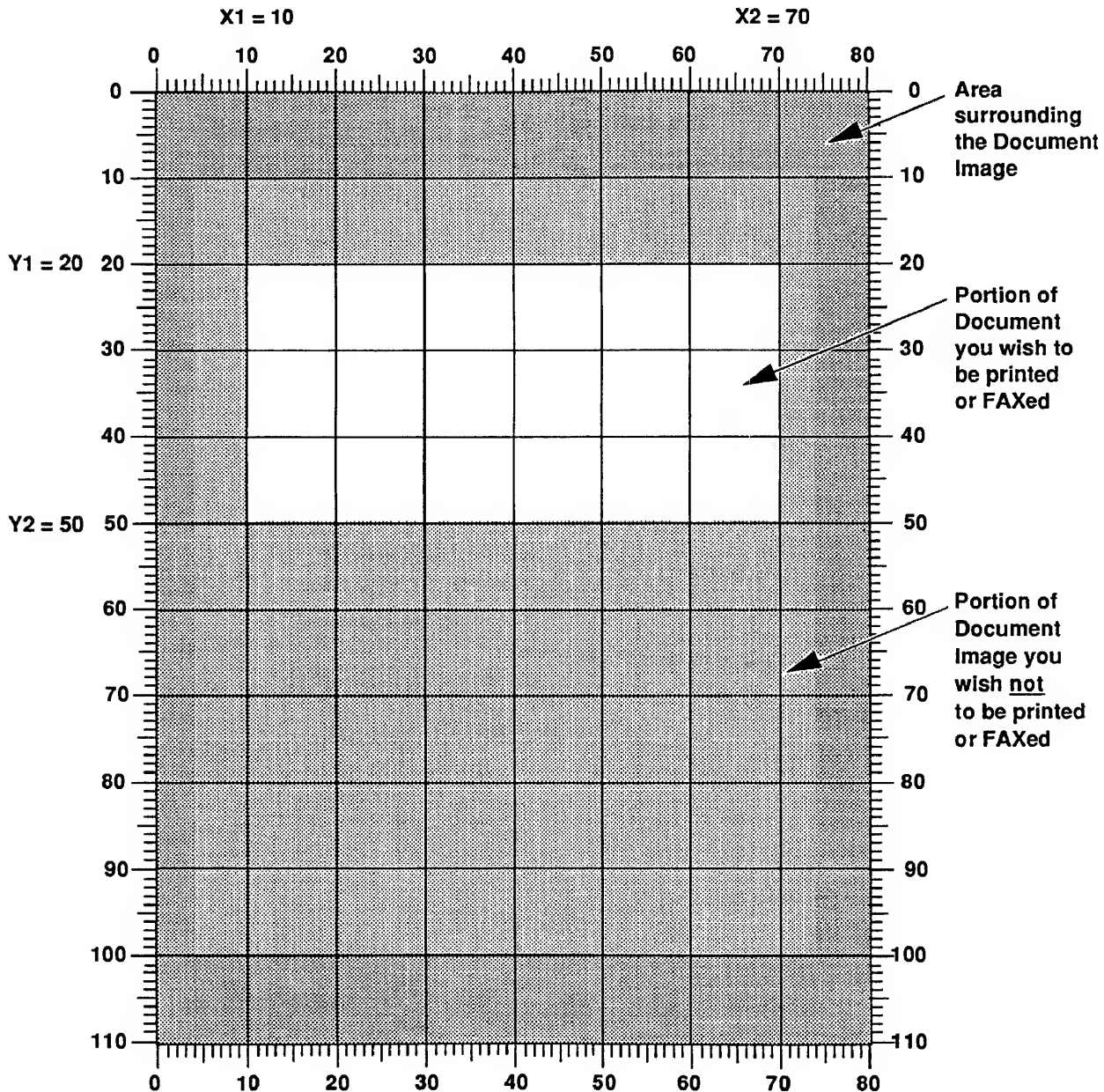
Setting the Mask Parameters (continued)



If a single document image is within the coordinates of the viewing screen, use the "Auto" (1) masking option, "Single" (0) mask mode. The unwanted area surrounding the document will be trimmed in the resulting print or FAXed copy.

The command string for this example is: **MASK, 1, ENTER, 0, ENTER.**

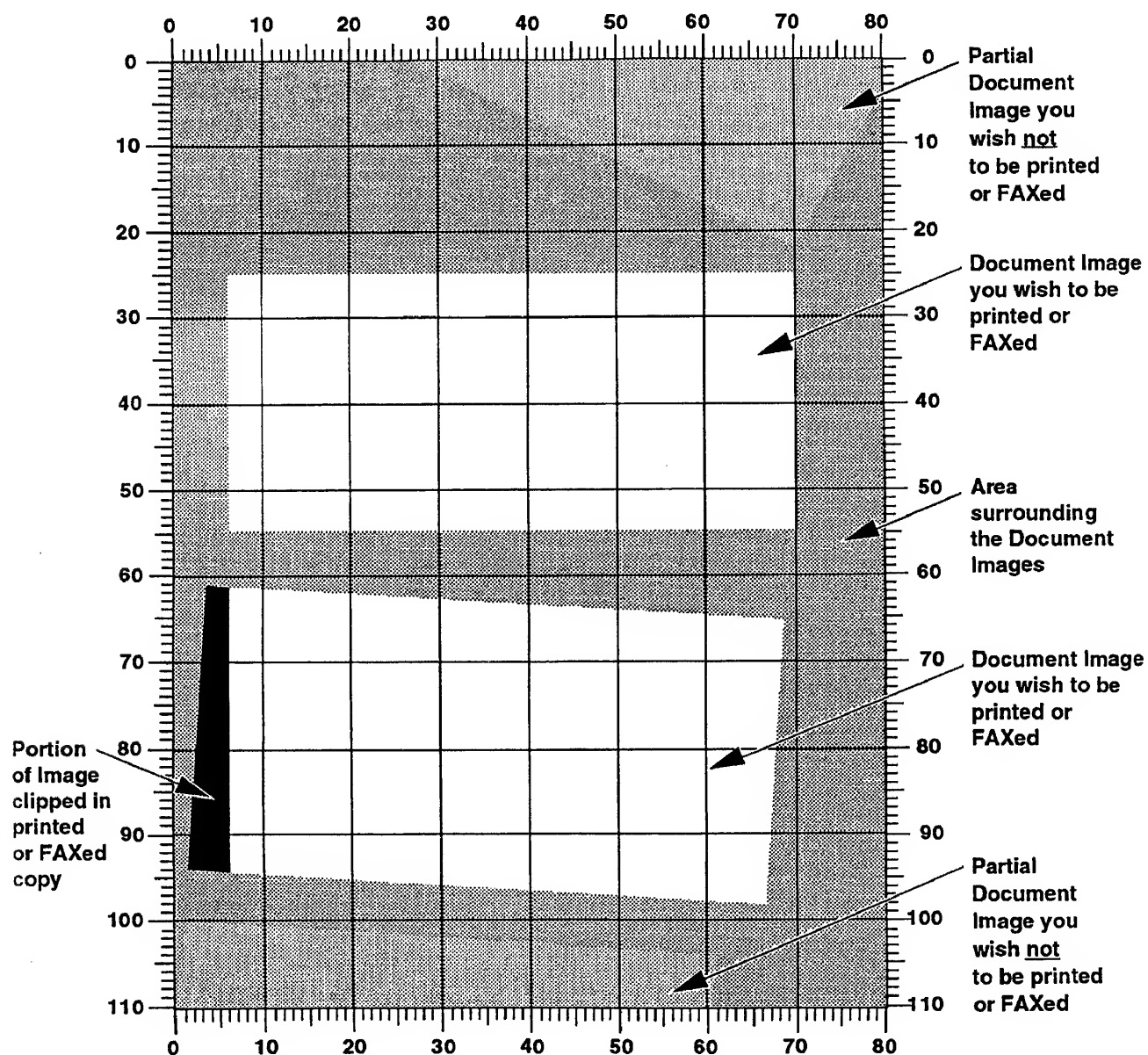
Setting the Mask Parameters (continued)



If you want to print or FAX only the middle document image, use the "Auto" (1) masking option, "Multi" (1) masking mode. The area surrounding the documents and the partial documents will be trimmed in the resulting print or FAXed copy.

The command string for this example is: **MASK, 1, ENTER, 1, ENTER.**

Setting the Mask Parameters (continued)



If you want to print or FAX both the top and bottom complete document images, use the "Auto" (1) masking option, "Multi" (1) masking mode. The area surrounding the documents and the partial documents will be trimmed in the resulting print or FAXed copy. Some "clipping" of the bottom document may occur.

The command string for this example is: **MASK, 1, ENTER, 1, ENTER.**

Setting the Mask Parameters (continued)**To Use Manual Masking:**

- 2c. Press 2 and **ENTER** for manual masking. The default manual masking parameters are for a full scan image. The parameters can be easily changed:

Note

The horizontal starting and ending points are X1 and X2; the vertical starting and ending points are Y1 and Y2. For example, the default values to mask an image using the borders of the Viewing Screen are:

```
Mask Option= 2 (Manual)
X1=0      X2=80
Y1=0      Y2=105*
* International Y2=117
```

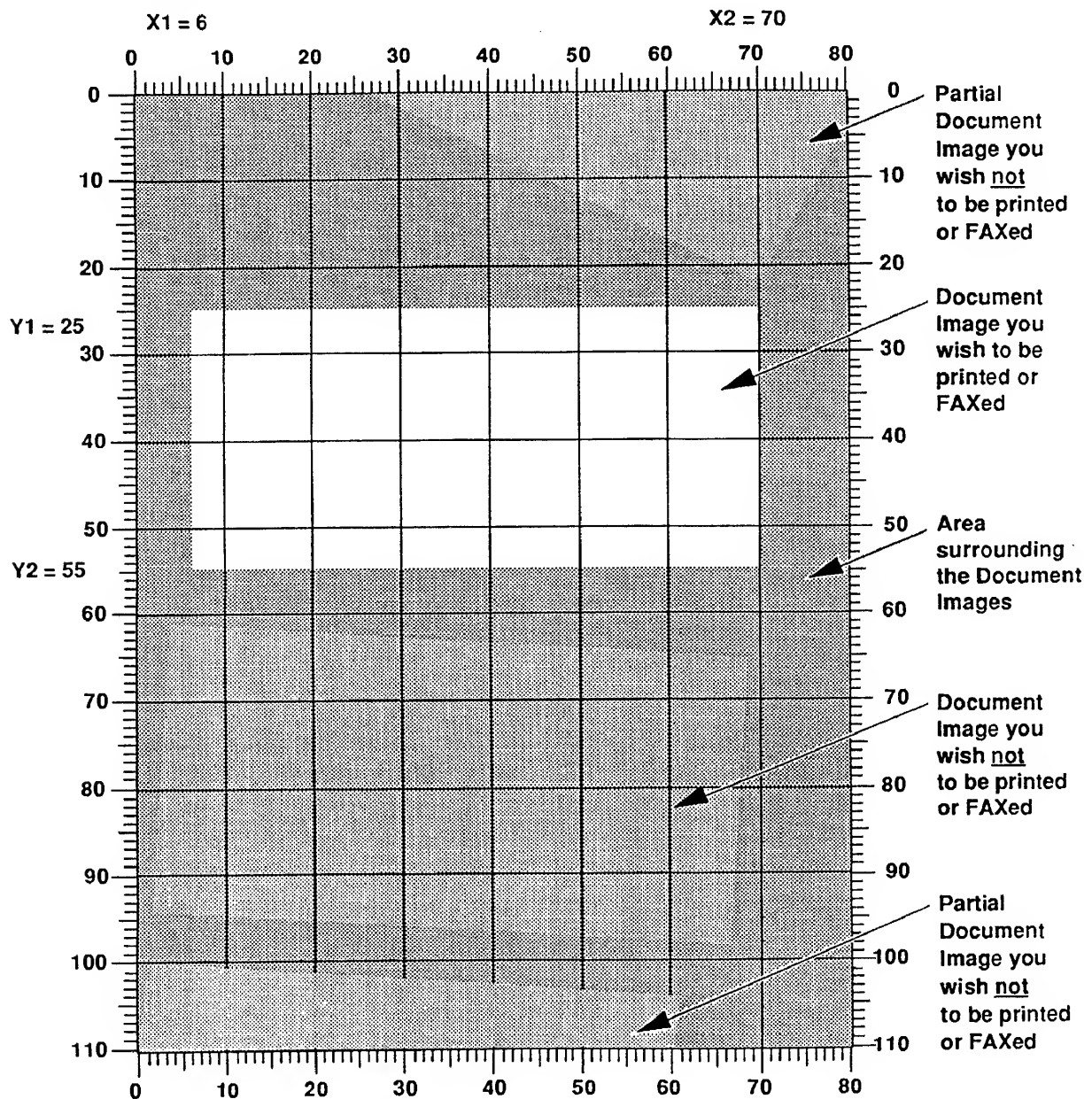
Using the coordinates on the Viewing Screen, enter the starting and ending x and y coordinates for the mask. Press **ENTER** after entering each coordinate. For example, to mask out the gray area as shown in the drawing on the next page, enter X1 = 6, X2 = 70, Y1 = 25, and Y2 = 55.

Note

If you enter an incorrect coordinate, press **CLR**, and reenter the coordinate.

```
Mask Option= 2 (Manual)
X1=6      X2=70
Y1=25     Y2=55
```

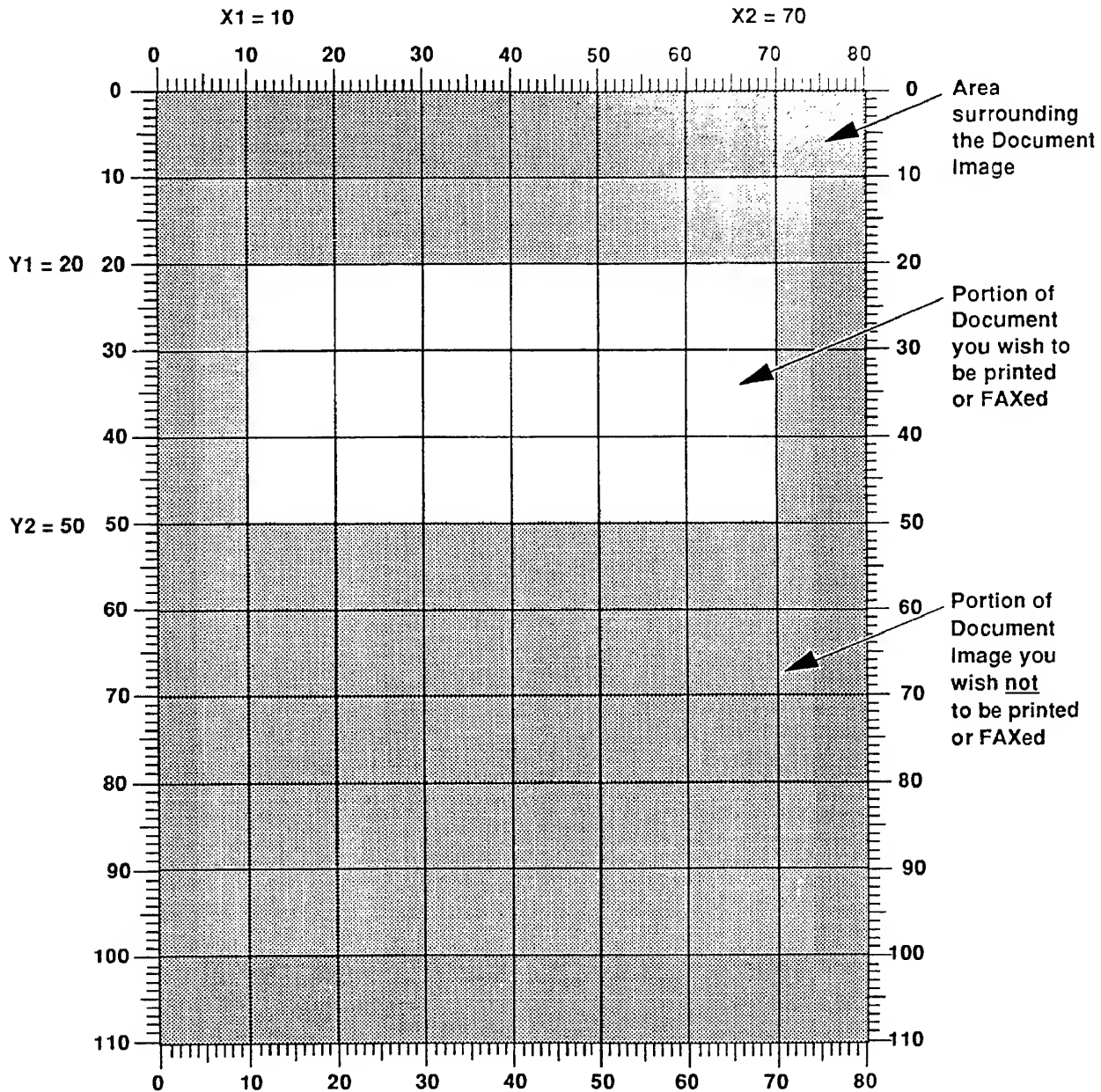
Setting the Mask Parameters (continued)



If you want to print or FAX only a portion of a document image, use the "Manual" (2) masking option. The area surrounding the document and the text surrounding the portion of the document wanted will be trimmed in the resulting print or FAXed copy.

The command string for this example is: **MASK, 2, ENTER, 6, ENTER, 7,0, ENTER, 2,5, ENTER, 5,5, ENTER.**

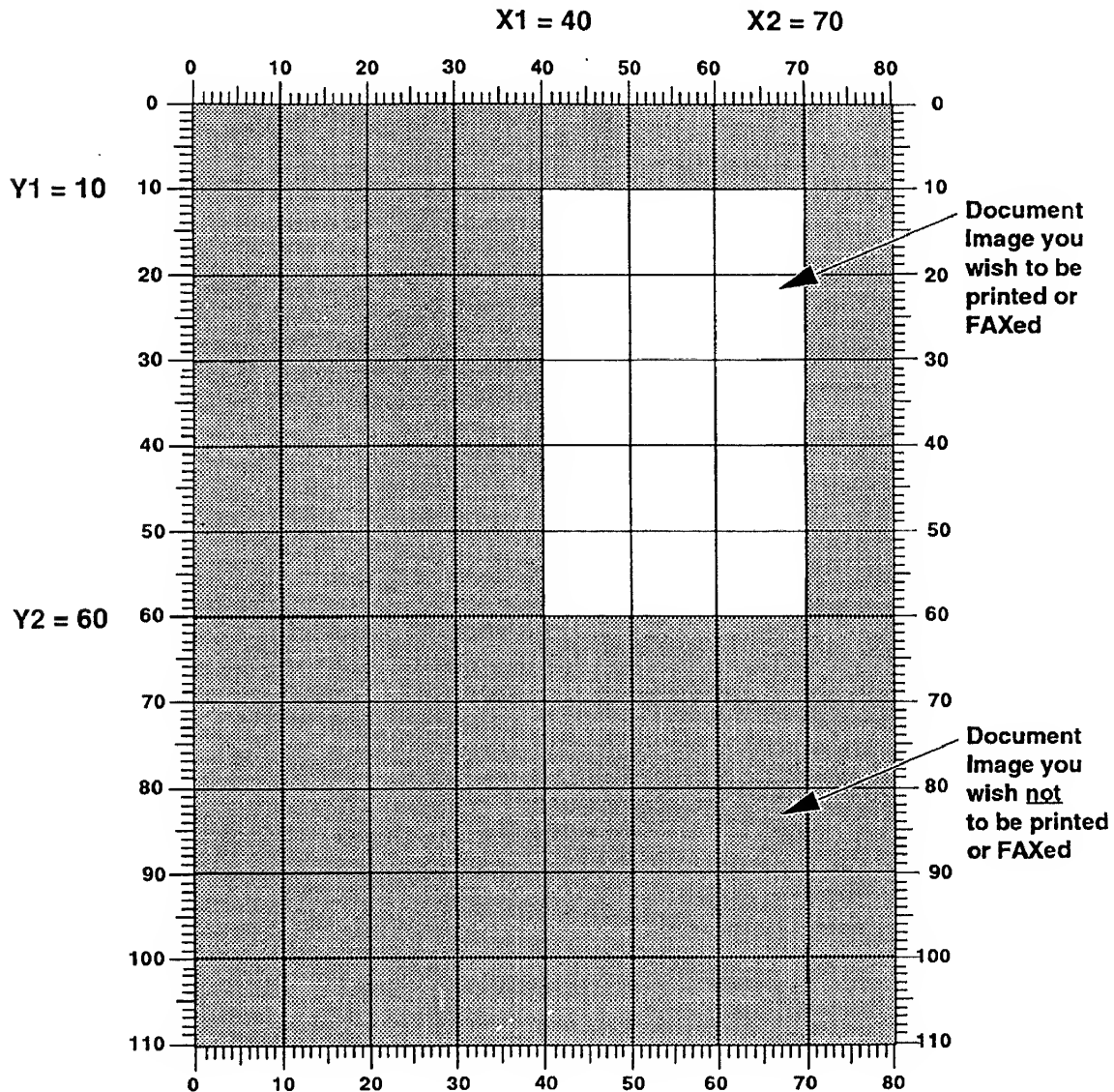
Setting the Mask Parameters (continued)



If you want to print or FAX only the top complete document image, use the "Manual" (2) masking option. The area surrounding the documents, the bottom complete document, and the partial documents will be trimmed in the resulting print or FAXed copy.

The command string for this example is: **MASK, 2, ENTER, 1,0, ENTER, 7,0, ENTER, 2,0, ENTER, 5,0, ENTER.**

Setting the Mask Parameters (continued)



If you want to selectively mask a portion of a document image, use the "Manual" (2) mask option. Using the coordinates on the Viewing Screen. Key in the starting and ending x and y coordinates. For the example above you would enter X1=40, X2=70, Y1=10, and Y2=60.

The command string for this example is: **MASK, 2, ENTER, 4, 0, ENTER, 7, 0, ENTER, 1, 0, ENTER, 6, 0, and ENTER.**

Setting the Mask Parameters (continued)**To Use Special/Top Masking**

2d.

Press **3** and **ENTER** for Special/Top Masking. The default manual masking parameters are for a full scan image. The parameters can be easily changed:

```
Masking= Special/T
Mask at top=
Enter Coordinate
```

Note

The Special/Top Masking feature scans the full screen width (X coordinates 0 to 80) starting at the top of the Viewing Screen (Y coordinate 0) and ending at the coordinate selected.

Enter the coordinate from which you wish to start masking. For example, to retain the top of the document as shown in the drawing on the next page, enter **20** as the coordinate.

```
Masking= Special/T
Mask at top= 20
Enter Coordinate
```

Press **ENTER**.

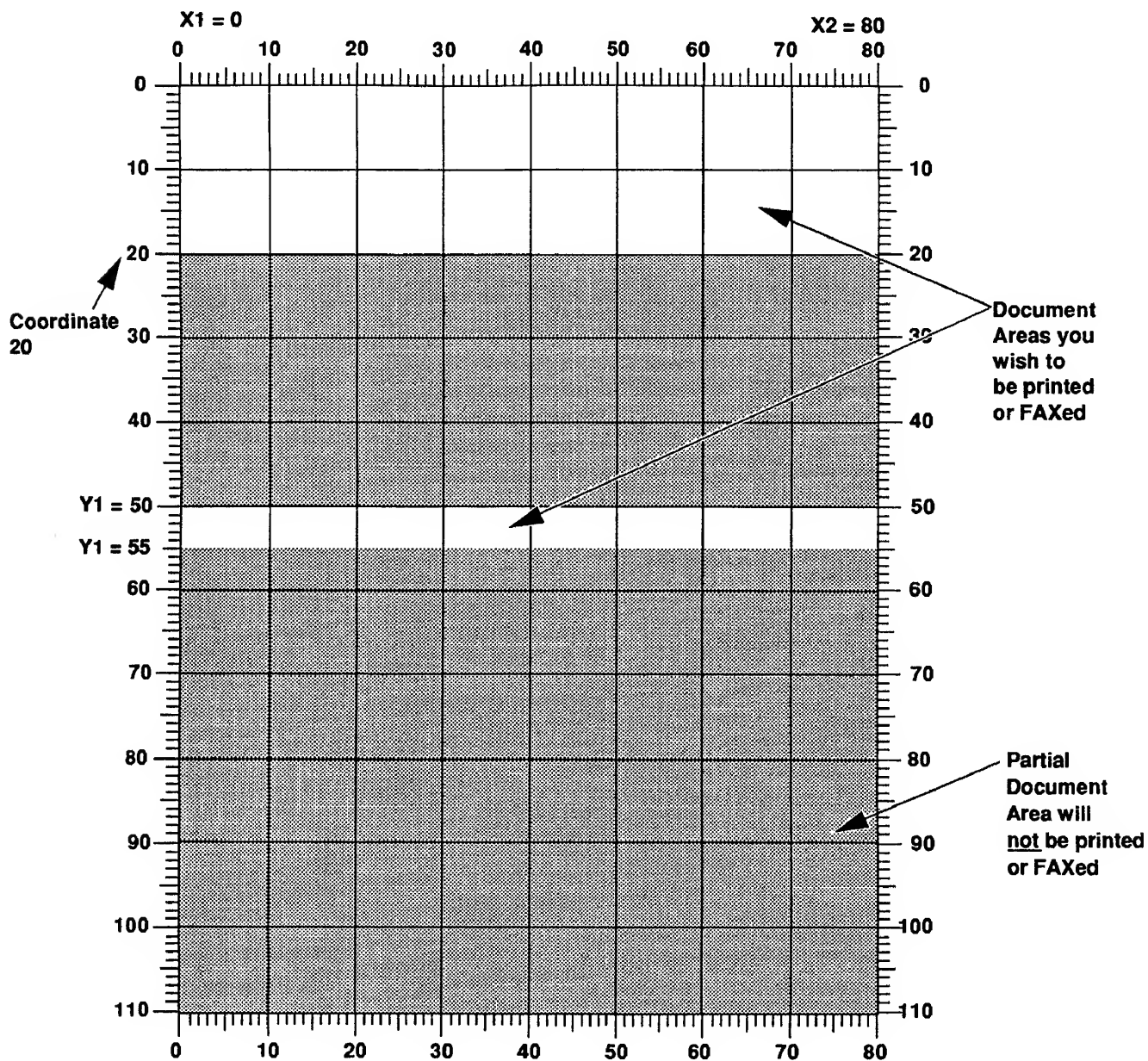
Note

The horizontal starting and ending points are X1 and X2; the vertical starting and ending points are Y1 and Y2. For example, the default values to mask an image using the borders of the Viewing Screen are:

```
Masking= Special/T
X1= 0   X2= 80
Y1= 0   Y2= 105*
*(International Y2= 117)
```

Press **PRINT** for a hard copy or proof before FAXing.

Setting the Mask Parameters (continued)



If you wish to retain a block of information at the top of a document image as well as a partial image within the document, use the Special/Top Masking option.

For the example above, press **MASK, 3, ENTER, 20, ENTER, 0, ENTER, 80, ENTER, 50, ENTER, 55, ENTER.**

Setting the Mask Parameters (continued)

To Use Special/Left Masking

2e.

Press **4** and **ENTER** for Special/Left Masking. The default manual masking parameters are for a full scan image. The parameters can be easily changed:

```
Masking= Special/L
Mask at left=
Enter Coordinate
```

Note

The Special/Left Masking feature scans the full screen height (Y coordinates 0 to 105 (117 International) starting at the left of the Viewing Screen (X coordinate 0) and ending at the coordinate selected.

Enter the coordinate from which you wish to start masking. For example, to retain the left of the document as shown in the drawing on the next page, enter **20** as the coordinate.

```
Masking= Special/L
Mask at left= 20
Enter Coordinate
```

Press **ENTER**.

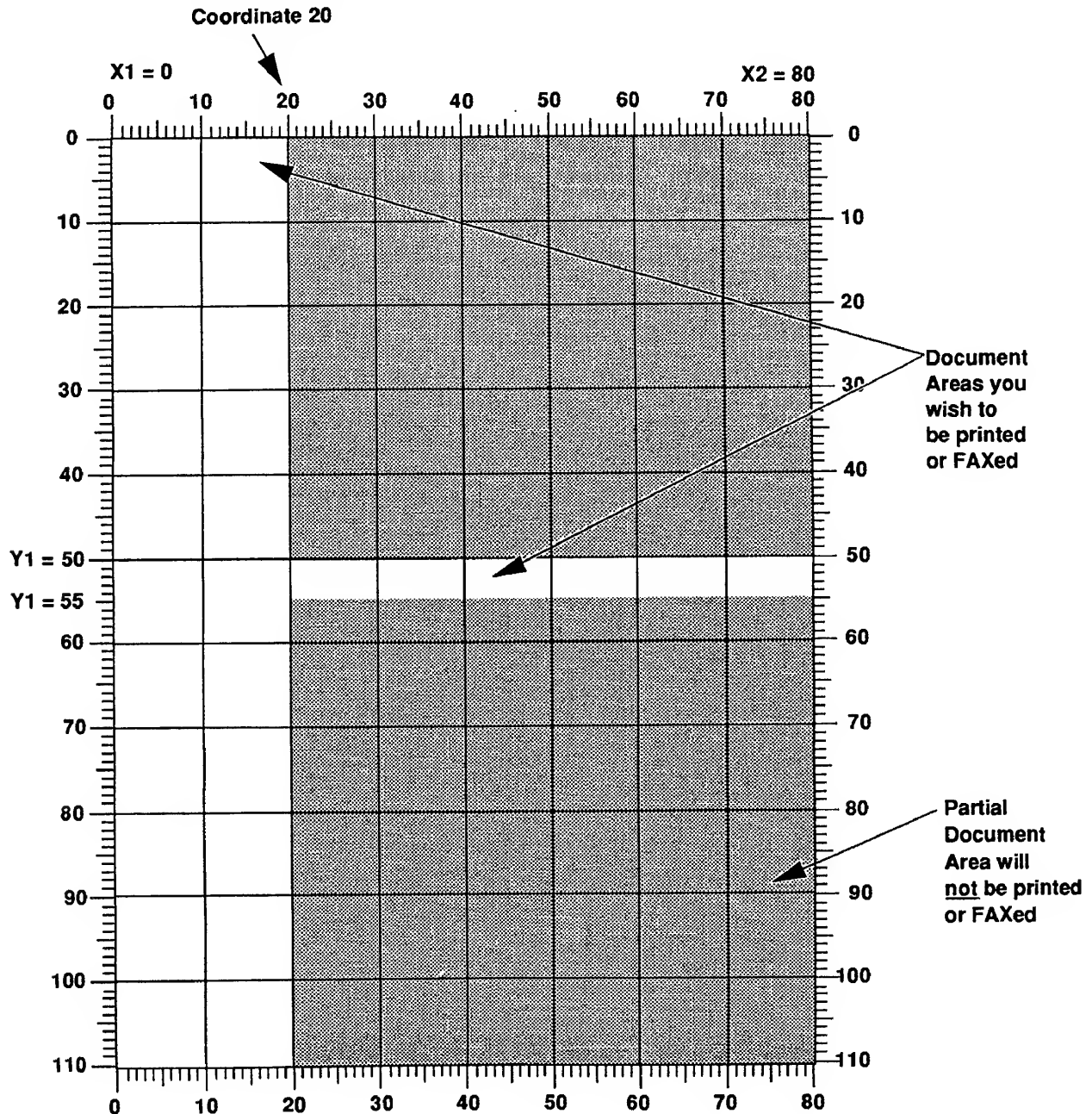
Note

The horizontal starting and ending points are X1 and X2; the vertical starting and ending points are Y1 and Y2. For example, the default values to mask an image using the borders of the Viewing Screen are:

```
Masking= Special/L
X1= 0   X2= 80
Y1= 0   Y2= 105*
*(International Y2= 117)
```

Press **PRINT** for a hard copy or proof before FAXing.

Setting the Mask Parameters (continued)



If you wish to retain a block of information at the left of a document image as well as a partial image within the document, use the Special/Left Masking option.

For the example above, press **MASK, 4, ENTER, 20, ENTER, 0, ENTER, 80, ENTER, 50, ENTER, 55, ENTER.**

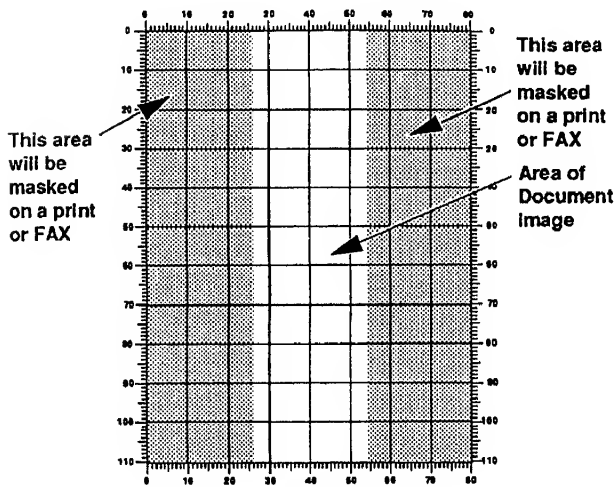
Setting the Mask Parameter (continued)

Note

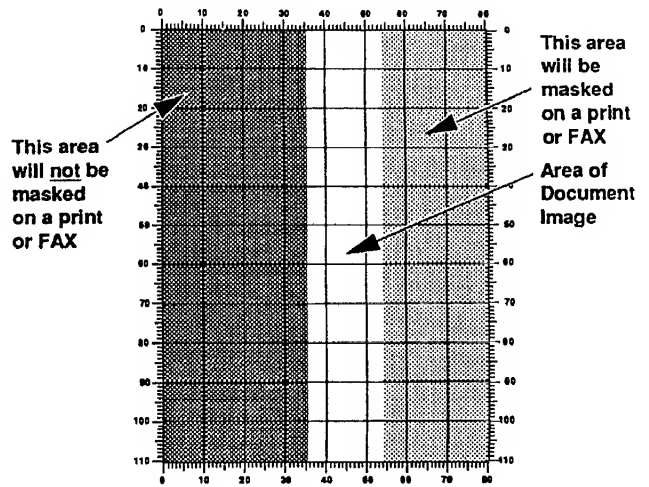
The parameter value now entered will remain until the 7710 is switched off. To change the value for just one print or FAX cycle, see Changing a Parameter Setting for One Print or FAX Cycle, page RS-32. To reset the parameter to the default setting, see Resetting a Parameter to the Default Setting, page RS-33. To change the default value, see Changing a Power On Default Setting, page RS-34.

Tips for Selecting Type of Masking	Auto		Manual	Special/Top	Special/Left	See Page
	Single	Multi				
If the screen shows a single complete document, and no partial documents, but you wish to remove the area surrounding the document:	X					RS-11
If you wish to transfer only <u>part</u> of a document image:			X			RS-16
If the screen shows a single complete document, but has one or more partial documents you wish to mask out:		X				RS-12
If the screen shows more than one complete document and you wish to transfer only a single document:			X			RS-16
If the screen shows more than one complete document and you wish to transfer all the documents:		X				RS-12
If you wish to include a block of information at the top of a document with a partial image:				X		RS-20
If you wish to include a block of information at the left of a document with a partial image:					X	RS-22

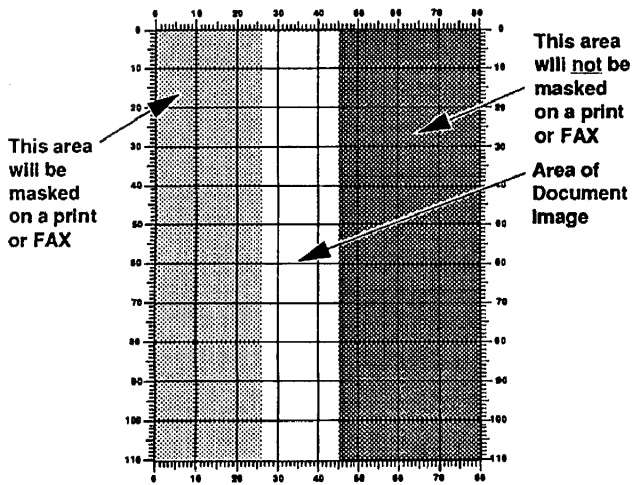
Setting the Mask Parameters (continued)



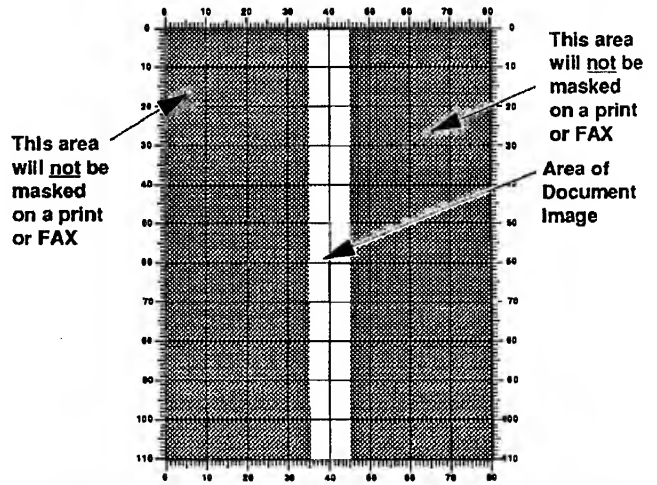
Will automask both sides.



Will automask the right side, but not the left.



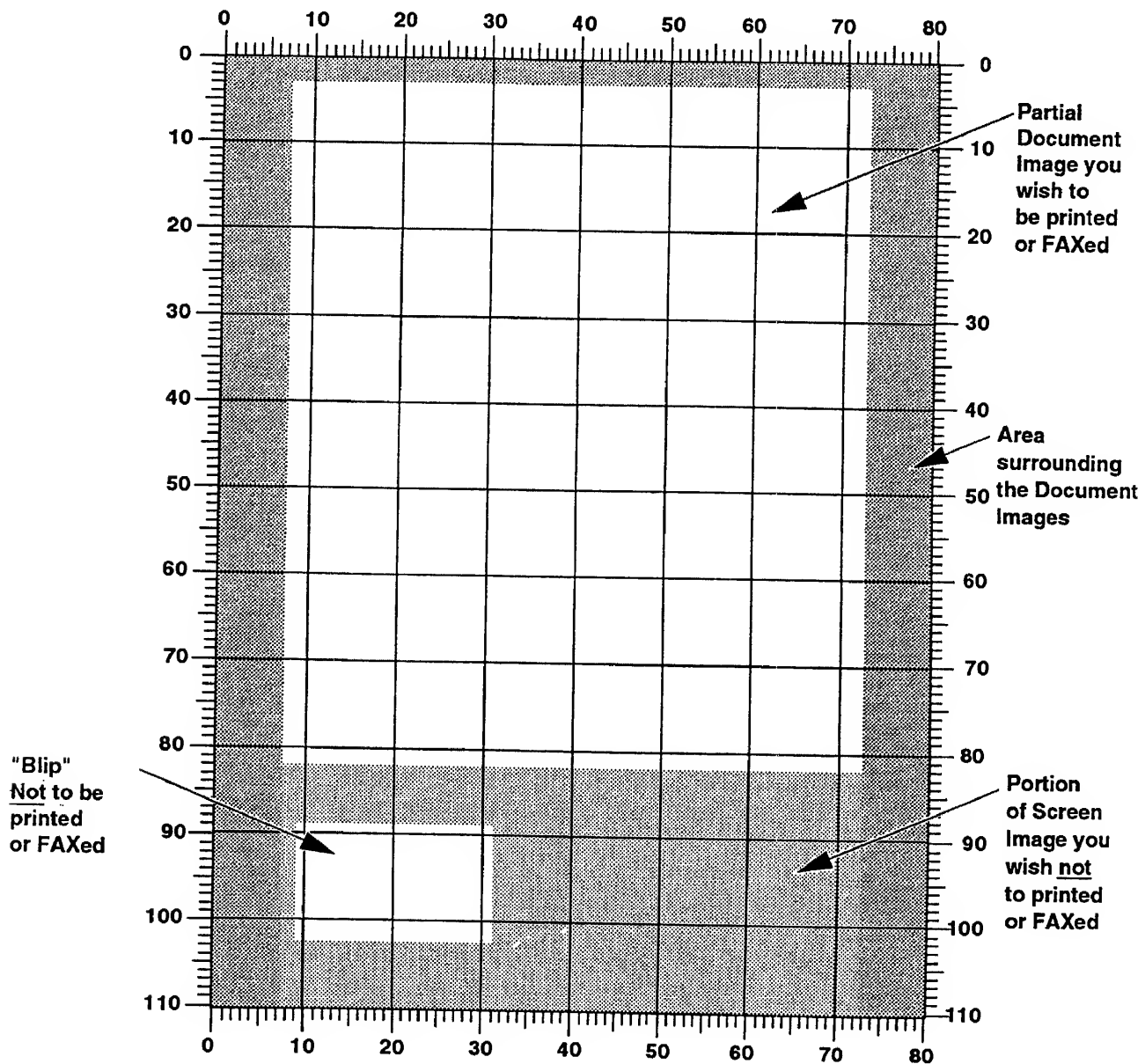
Will automask the left side, but not the right.



Will not automask either side.

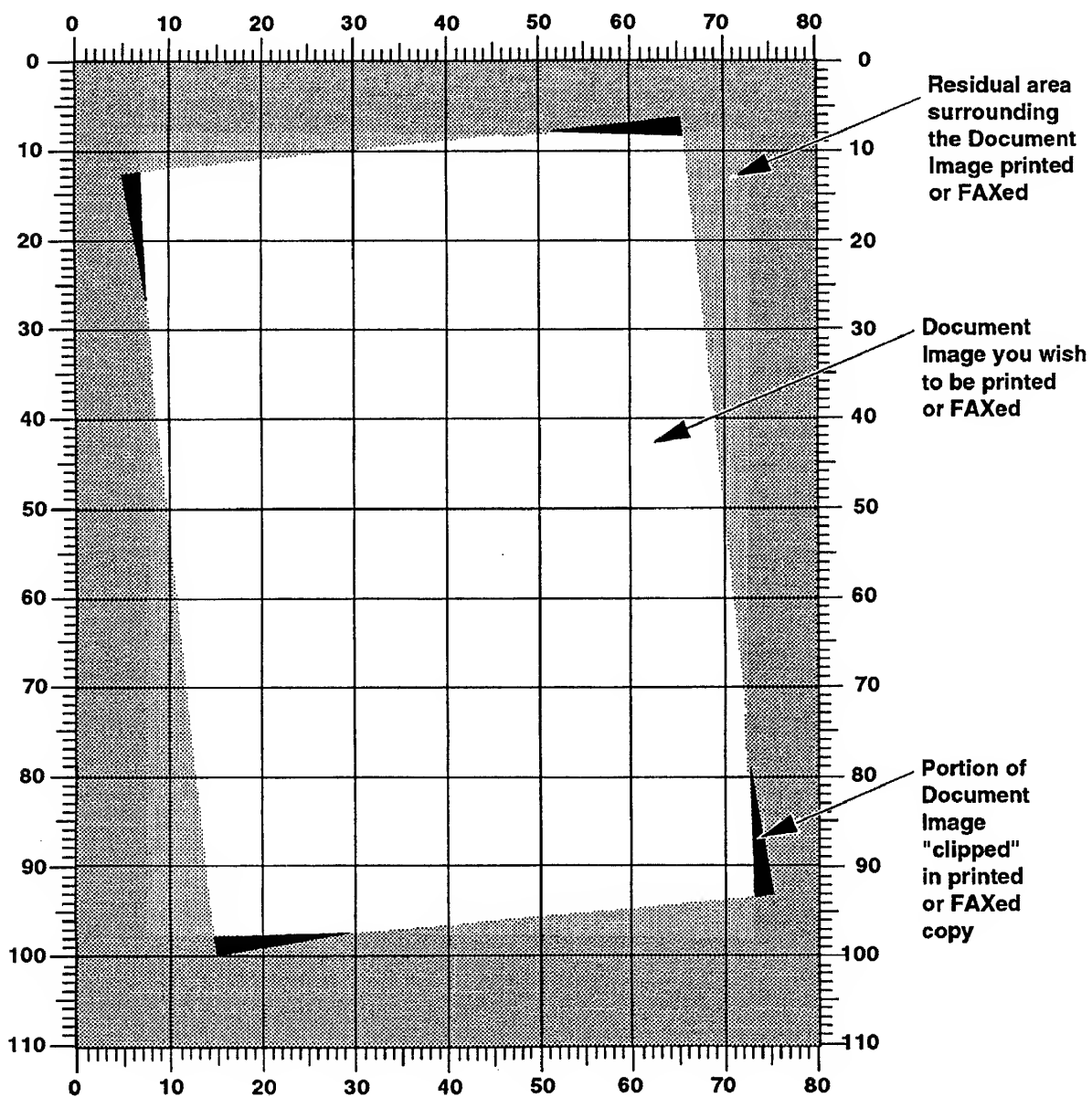
The smallest image the 7710 Reader-Scanner can successfully automask is an image within Horizontal Fiducial Mark 26 and Horizontal Fiducial Mark 54.

Setting the Mask Parameters (continued)

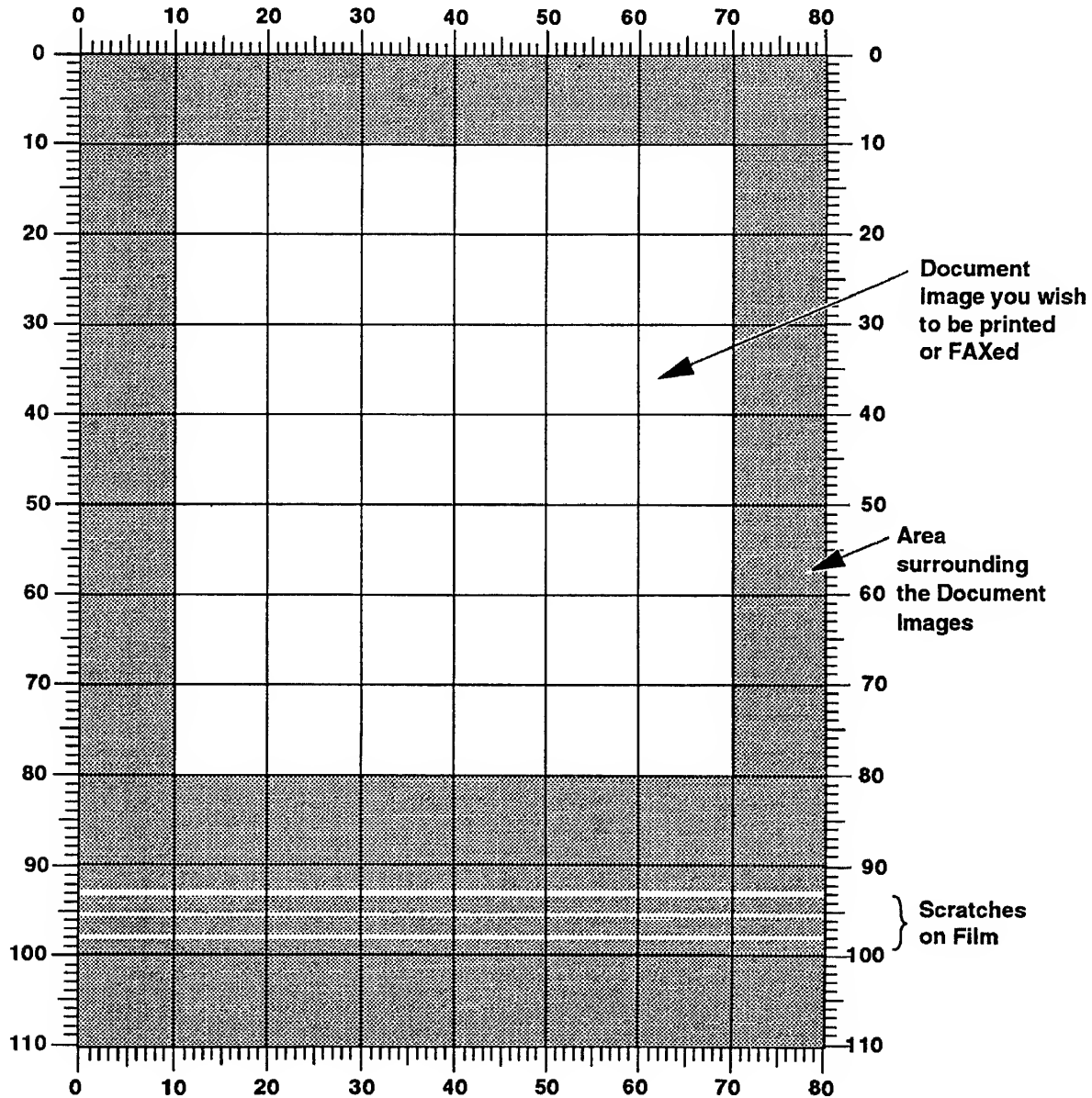


If the screen image includes a "blip", the 7710 Reader-Scanner will interpret the blip as part of the document and not mask off the area surrounding the blip in the resulting print or FAXed copy. Centering the document image will avoid this potential problem.

Setting the Mask Parameters (continued)

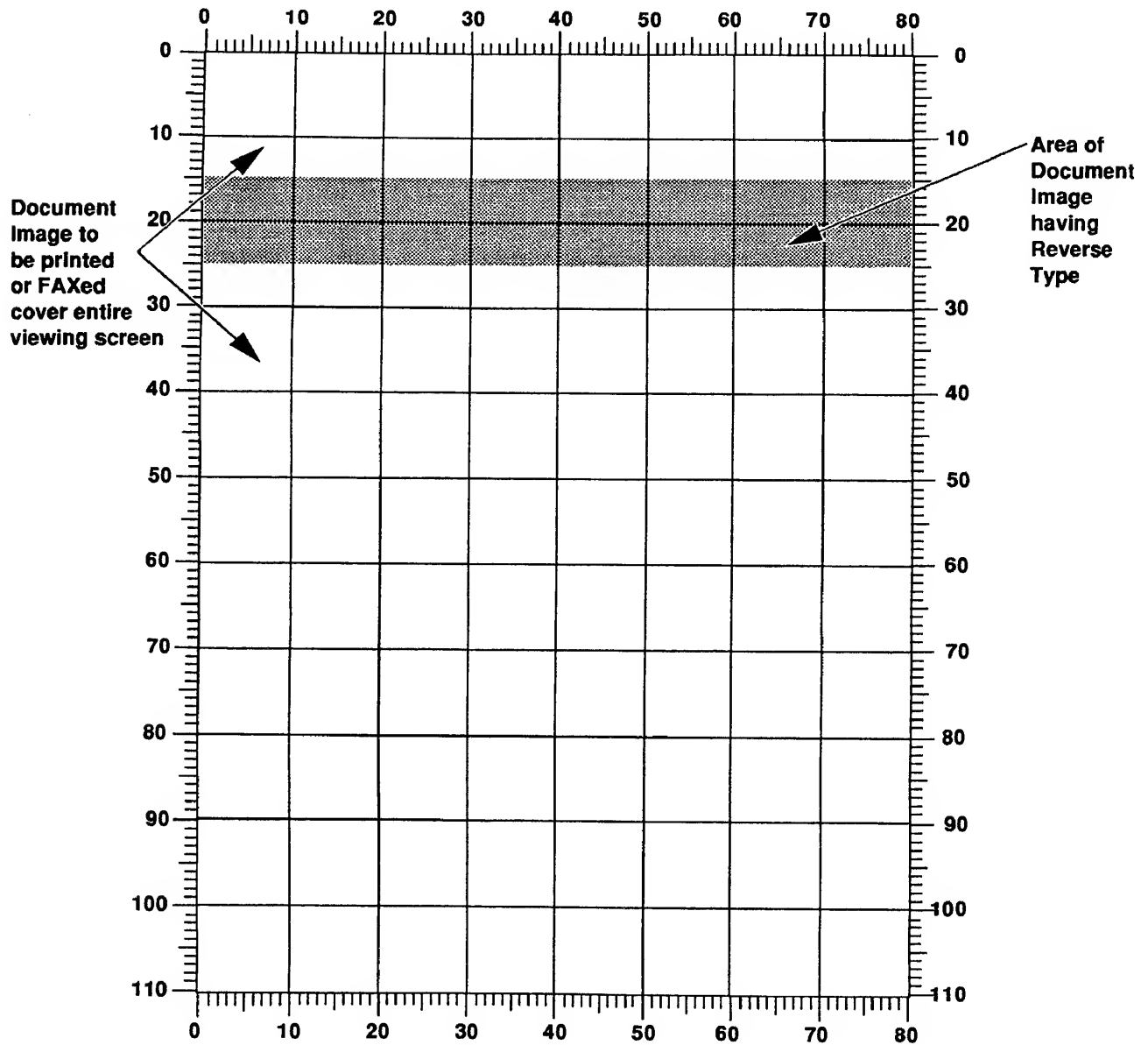


If the document image is skewed, the corners of the masked image will be "clipped" and part of the area surrounding the document will remain in the resulting print or FAXed copy.

Setting the Mask Parameters (continued)

If the film has heavy scratches, move the image to eliminate the scratches displayed on the viewing screen, or, use the "Manual" (2) masking option. See page RS-16. The scratches may be falsely interpreted as a document edge.

Setting the Mask Parameters (continued)



If the document image displayed on the viewing screen has an area having reverse type (black characters on a white background) that runs fully across the page, use the "Auto" (1) masking option "Single" (0) masking mode, "Manual" (2) masking option or Special/T masking option. See pages RS-11, R-16 and RS-20 respectively.

Setting the Photo Parameters

You can use the photo option to halftone a photograph in a document image. Halftoning a microfilmed photograph will result in a clearer print or scanned image.

1. Press **PHOTO** to display the photo option setup menu on the Scanner Display.

```
Photo Option = 0 (Off)
Enter 0 for Off
      1 for On
```

Note: To return to the previous display, press **CANCEL**.

2. Press **0** and **ENTER** to switch off the photo option and return to Ready, or press **1** and **ENTER** to display the photo x and y coordinates. The horizontal starting and ending points are X1 and X2. The vertical starting and ending points are Y1 and Y2. For example the default values to halftone an image within the outside borders of the Viewing Screen are:

```
Photo Option = On
X1=0   X2=80
Y1=0   Y2=105
```

3. Using the coordinates from the Viewing Screen, enter the starting and ending x and y coordinates for the photograph. Press **ENTER** after entering each coordinate. For example, to halftone an image shown as gray in the drawing on the next page, enter X1 = 40, X2 = 70, Y1 = 10, and Y2 = 60.

Note

If you enter an incorrect coordinate, press **CLR**, and reenter the coordinate.

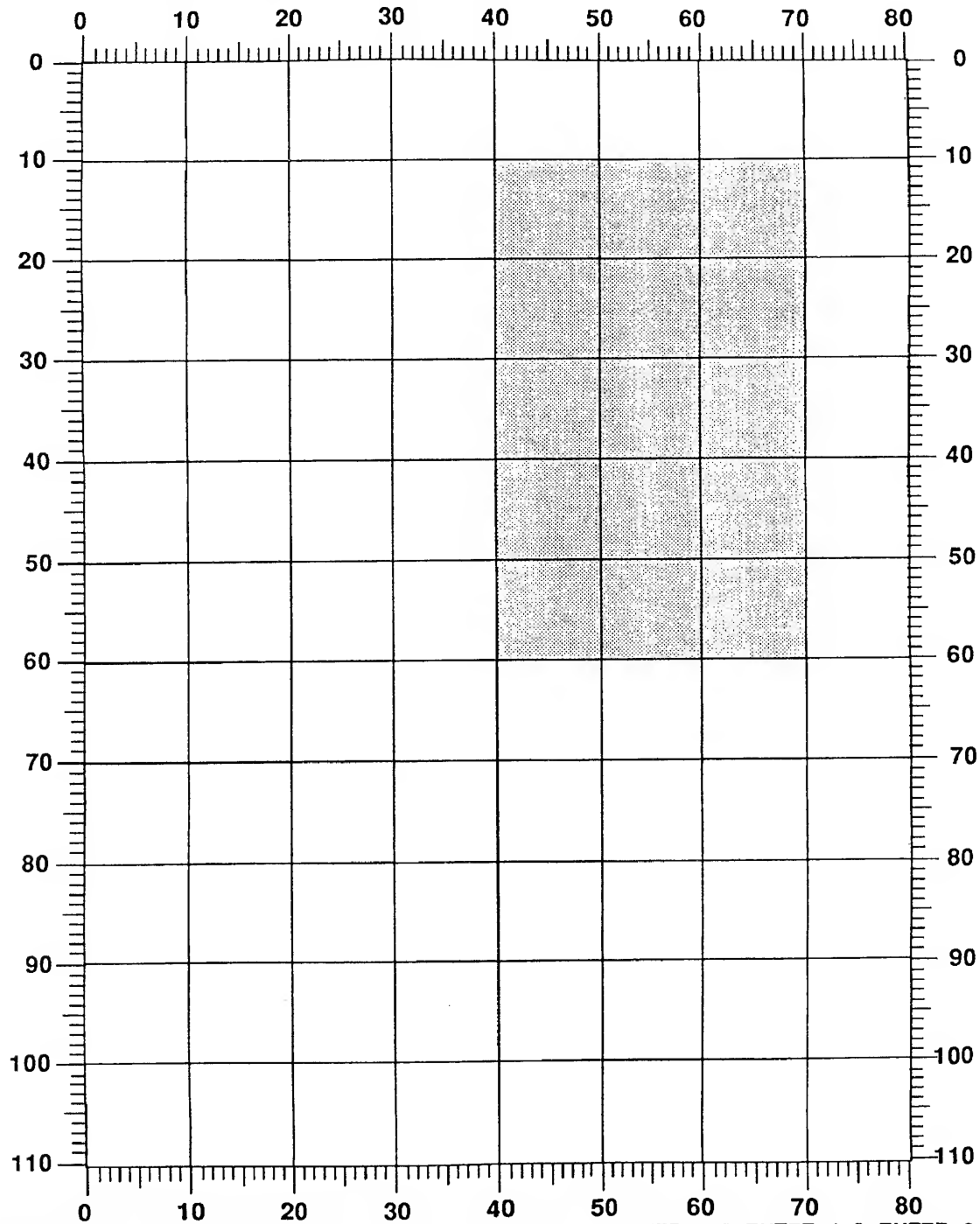
```
Photo Option = On
X1=40   X2=70
Y1=10   Y2=60
```

4. Press **PRINT** and repeat Step 3 if necessary.

Note

The parameter value now entered will remain until the 7710 is switched off. To change the value for one print or FAX cycle, see Changing a Parameter Setting for One Print or FAX Cycle, RS-32. To reset the parameter to the default setting, see Resetting a Parameter to the Default Setting, page RS-33. To change the default setting, see Changing a Power ON Default setting, page RS-34.

Setting the Photo Parameters (continued)



The command string for this example is: PHOTO, 1, ENTER, 4, 0, ENTER, 7, 0, ENTER, 1, 0, ENTER, 6, 0, and ENTER.

Changing a Parameter Setting for One FAX or Print Cycle

You can change a current parameter setting for just one scan cycle.

1. Press **OVRD** to display the override mode menu on the Scanner Display.

```
----Override Mode---  
Enter parameter
```

Note: Press **CANCEL** or **ENTER** if no change is needed.

2. Press the key (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, or **PHOTO**) for the parameter to be changed. For example, press **MDIIP** to display the current threshold and gain levels.

```
----Override Mode---  
MDIIP = XX  
Enter value
```

3. Enter the new parameter setting.

```
----Override Mode---  
MDIIP = XX  
Enter value
```

4. Press **ENTER**.

Note

The parameter will revert to its previous value following the next scan cycle.

Resetting a Parameter to the Default Setting

You can reset a parameter to the default setting. To change threshold and gain, exposure, the number of prints, the mask option parameters, or the photo option parameters, press the **RSET** Key and the key for the parameter to be changed (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, **PHOTO**), and then press **ENTER**. To change all the parameters at the same time, press **RSET PMTR ENTER**.

1. Press **RSET** to display the reset mode menu on the Scanner Display.

```
-----Reset Mode-----  
Enter parameter
```

2. Press the key (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, or **PHOTO**) for the parameter to be reset to the default setting. For example, press **MDIIP** to reset the gain and threshold levels to the default values.

```
-----Reset Mode-----  
Reset MDIIP
```

3. Press **ENTER**.

Note

The parameter has reverted to the default value.

Changing a Power ON Default Parameter Setting

You can change a default parameter setting.

1. Press **DFLT** to display the default mode menu on the Scanner Display.

```
---Default Mode---  
Enter parameter
```

2. Press the key (**MDIIP**, **SIZE/RES**, **FILM**, **XPOSE**, **COPY#**, **MASK**, or **PHOTO**) for the parameter to be changed. For example, press **MDIIP** to display the current threshold and gain levels.

```
-----Default Mode-----  
MDIIP = XX  
Enter value
```

3. Enter the new parameter setting.

```
-----Default Mode-----  
MDIIP = YY  
Enter value
```

4. Press **ENTER**.

Note

The new default parameter setting will remain as default when the 7710 Reader-Scanner is switched off and on until again changed by the above procedure.

Storing and Retrieving Parameter Macros

A unique feature of the 3M 7710 Reader-Scanner is its ability to store long strings of parameter commands. These commands, called "macros", can then be accessed with just three keystrokes. Up to nine masking macros can be stored and accessed using the **F1** Key and 1 through 9 Numeric Keys. The **F2** and **F3** Keys can be used to store up to 18 additional macros for all other machine parameters.

As you create macro commands use the "macro sheet" and the red marking pen provided for you to record the parameter values. The sample macro sheet on the next page provides samples of the types of macros that you can create.

You can determine what parameters are in a macro by first pressing the **F1**, **F2**, or **F3** Key, the numeric key, and any of the parameter keys you wish to check. You can also change a macro parameter at this time.

The potential number of macros that you can create is probably greater than what you will ever use. You might consider splitting the **F2** and **F3** macros into high quality and high speed for example. High quality macros could be setup to compensate for variations in film quality for high quality prints or FAXes. High speed macros could again be set up to compensate for variations in film quality but for high speed prints or FAXes.

Storing a Macro

1. Check or change each of the 7710 parameters. The current setting of each parameter will be stored. These include film polarity, number of prints, print size, resolution, MDIIP (threshold and gain), exposure, masking, and photo.

2. Press **TEST**.

```
-----Test Mode-----
Test= ?
Enter 1 thru 9
```

3. Press **1** and **ENTER**.

```
-----Test Mode-----
Test= Function Keys
Select F1 thru F3
```

4. Press **F1** if the macro is for masking. Or press **F2** or **F3** if the macro is for any parameter other than masking.

F1		F2		F3
Mask Macros		Enhanced Macros		Speed Macro
Set macro=	OR	Use macro=	OR	Use macro=
Enter 1 thru 9		Enter 1 thru 9		Enter 1 thru 9

Note

See the tables on the following page for examples. Use the tables provided to help keep track of the macros you have defined.

5. Press any one of the 1 through 9 Numeric Keys you wish to use as the macro. Then press **ENTER**.

Mask Macros		Enhanced Macros		Speed Macro
Set macro=1	OR	Use macro=1	OR	Use macro=1
Enter 1 thru 9		Enter 1 thru 9		Enter 1 thru 9

Retrieving a Macro

Press **F1**, **F2**, or **F3**; Numeric Key (1 to 9), and **ENTER**.

7710 Parameter Macros

Macro Name	Macro	Parameter																
		Off	Auto		Manual				Special/T					Special/L				
			Single	Multi	X1=	X2=	Y1=	Y2=	Co=	X1=	X2=	Y1=	Y2=	Co=	X1=	X2=	Y1=	Y2=
1 Check	F1-1					10	70	10	40									
2 Checks	F1-2					10	70	10	80									
Full Page	F1-3		✓															
SSN Listing	F1-4									10	0	80	10	105				
	F1-5																	
	F1-6																	
	F1-7																	
	F1-8																	
	F1-9																	

Macro Name	Macro	Parameter														
		MDIIP		Exposure (1-4)		Photo					Resolution (dpi)		Paper Size	Film Polarity	Copy #	
		Thres	Gain	Manual	Auto	Off	X1=	X2=	X3=	X4=	200	300	Let A4	Neg	Pos	1 - 9
Lt. Image Hi Quality	F2-1	6	6	2		✓					✓		✓	✓		1
DK. Image Hi Quality	F2-2	4	8	3		✓					✓		✓	✓		1
Poor Contrast Hi Qual.	F2-3	2	6	4		✓					✓		✓	✓		1
Very Lt. Hi Quality	F2-4	3	8	1		✓					✓		✓	✓		1
	F2-5															
	F2-6															
	F2-7															
	F2-8															
Normal Image	F2-8	4	4	2		✓					✓		✓	✓		1
Light Hi Speed	F3-1	4	4	2		✓					✓		✓	✓		1
Dark Hi Speed	F3-2	6	2	2		✓					✓		✓	✓		1
Poor Contrast Hi Speed	F3-3	4	2	3		✓					✓		✓	✓		1
Very Light Hi Speed	F3-4	2	2	4		✓					✓		✓	✓		1
	F3-5	3	2	1		✓					✓		✓	✓		1
	F3-6															
	F3-7															
	F3-8															
	F3-9															

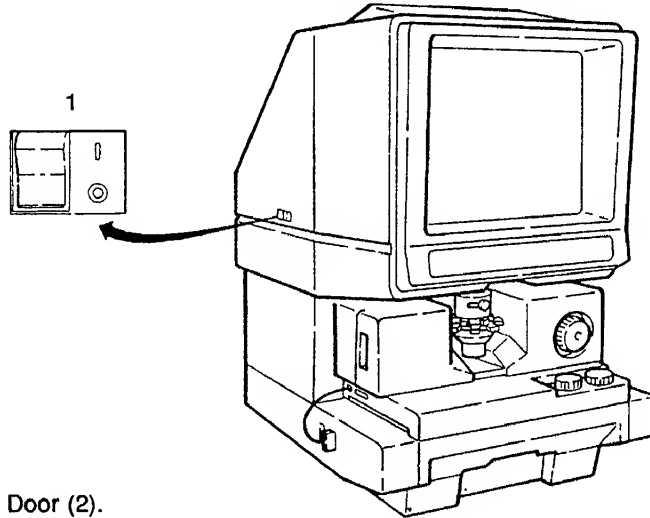
To store a masking macro parameter, first define the masking parameters, pages RS-9 thru RS-29. Next, determine which Numeric Key (1-9) you wish to assign the macro (see table above for examples and fill in the sheet provided). Then, press TEST, 1, ENTER, F1, 1 to 9, ENTER. To retrieve a masking macro, press F1, 1 to 9, ENTER.

To store all other 7710 parameters, first define the parameters, (pages RS-2 through RS-8 and RS-30 and RS-31). Determine which Macro Key (F2 or F3) and which Numeric Key (1 to 9) you wish to assign the macro (see the table above for examples and the sheet provided for you to complete). Then press TEST, 1, ENTER, F2 or F3, 1 to 9, ENTER. To retrieve the macro, press F2 or F3, 1 to 9, ENTER.

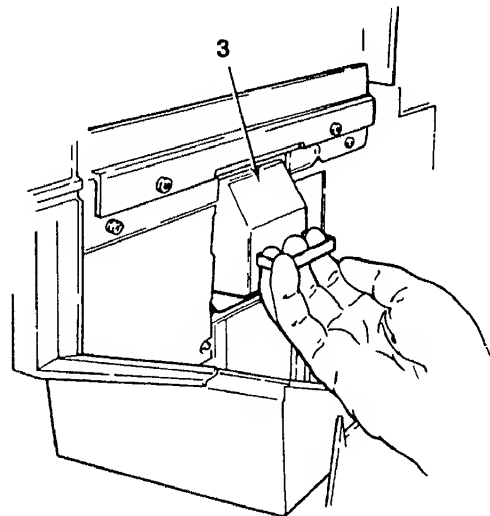
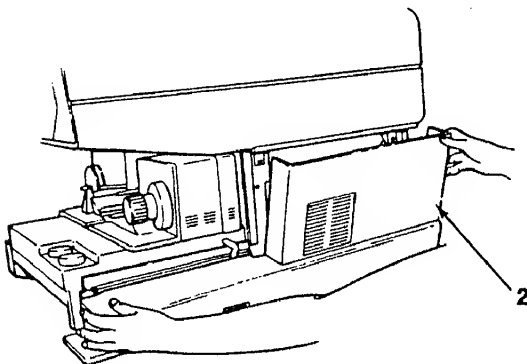
Replacing the Projection Lamp

Replace the Projection Lamp if the Viewing Screen is not lit when the Reader-Scanner power is on and the **ENTER** Key has been pressed.

1. Press the Reader-Scanner Power Switch (1) to the "0" (OFF) position.



2. Open the Right Side Door (2).
3. Grasp the handle, and pull the Lamp/Mirror Assembly (3) all the way out.

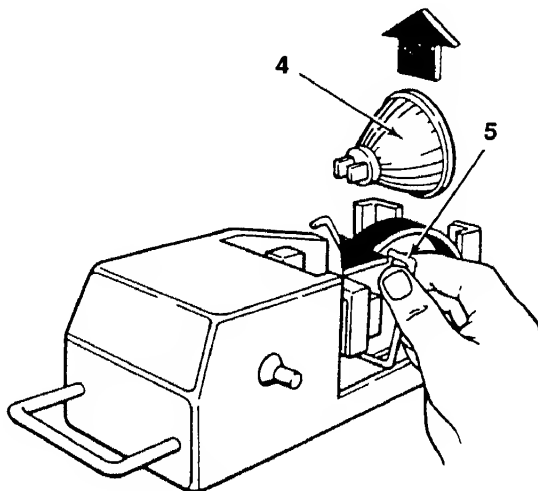


Replacing the Projection Lamp (continued)

WARNING

IF THE PROJECTION LAMP (4) RECENTLY BURNED OUT, IT MAY BE HOT ENOUGH TO CAUSE A SEVERE BURN. ALLOW SEVERAL MINUTES FOR THE LAMP AND OTHER COMPONENTS OF THE LAMP/MIRROR ASSEMBLY TO COOL BEFORE TOUCHING THEM.

4. Pull the Lamp Extractor Lever (5) back.
5. Remove and discard the Projection Lamp (4).
6. Push the Lamp Extractor Lever (5) forward.

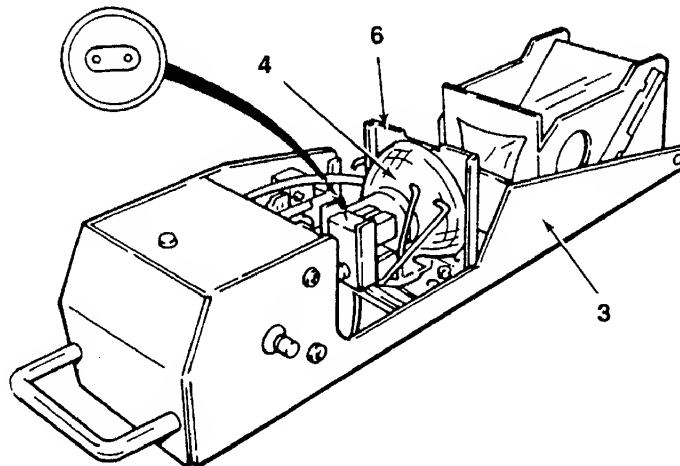


Note

Handle the Projection Lamp (4) by the outside of the reflector. Fingerprints or other contamination on the inside of the reflector affects the performance of the lamp.

Replacing the Projection Lamp (continued)

7. Place a new Projection Lamp (4) between the Lamp Bell Guides (6), keeping the pins horizontal.
8. Firmly push the base of the Projection Lamp (4), seating the pins within the contacts. Ensure that the pins are parallel to the base of the Lamp/Mirror Assembly (3).
9. Install the Lamp/Mirror Assembly (3) in the Reader-Scanner.



10. Firmly push the Lamp/Mirror Assembly (3) in to engage the electrical contacts.
11. Close the Right Side Door.
12. Press the Reader-Scanner Power Switch to the "1" (ON) position.
13. Order a replacement lamp, 3M part number 78-8012-3601-5.

Changing the Zoom Lens Assembly

1. Adjust the green Zoom Wheel (1) so that the Zoom Lens Barrel (2) is at its physically lowest position.
2. Grasp the Zoom Lens Handle (3), and pull the Zoom Lens Assembly (4) straight out of the Reader-Scanner.

Note

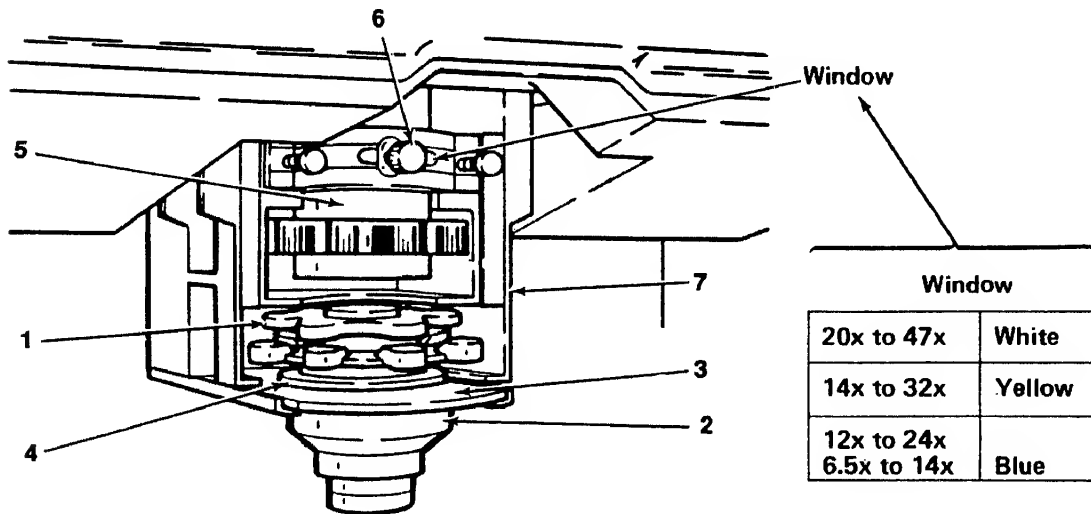
Avoid getting fingerprints on the glass surfaces of the lens.

3. Holding onto the Prism Assembly (5), pull the green Prism Release (6) out, and move the Prism Assembly (5) to the designated position:
 - For a 20X to 47X zoom lens, lower the Prism Assembly (5) so that the Prism Release (6) engages the upper groove. The color white can be seen through the window.
 - For a 14X to 32X zoom lens, raise or lower the Prism Assembly (5) so that the Prism Release (6) engages the middle groove. The color yellow can be seen through the window.
 - For a 6.5X to 14X or 12X to 24X zoom lens, raise the Prism Assembly (5) so that the Prism Release (6) engages the lower groove. The color blue can be seen through the window. An Adjustable Condenser Lens Kit (78-8060-7127-6) must be installed for both of these lenses.

Note

Avoid getting fingerprints on the glass surfaces of the lens.

4. Install the new Zoom Lens Assembly (4) on the Zoom Prism Bracket (7) as follows:
 - a. Engage the gimbal ring with the track in the Zoom Prism Bracket (7).
 - b. Pushing down slightly on the gimbal ring push the Zoom Lens Assembly (4) back into the Reader-Scanner.



Cleaning the Zoom Lens

1. Adjust the green Zoom Wheel (1) so that the Zoom Lens Barrel (2) is at its physically lowest position.
2. Grasp the Zoom Lens Handle (3), and pull the Zoom Lens Assembly (4) straight out of the Reader-Scanner.

Note

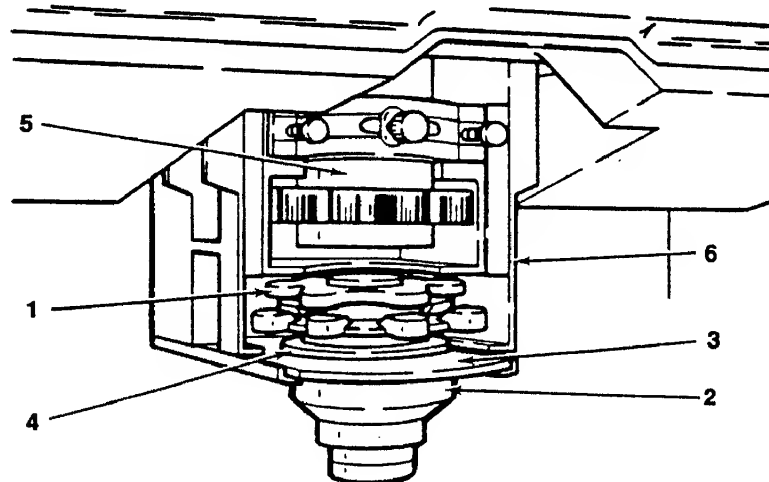
Avoid getting fingerprints on the glass surfaces of the lens.

3. Blow accumulated dust from the surface of the lens with clean, dry compressed air (sold at photographic supply stores).
4. To remove fingerprints or remaining debris, clean the lens with a soft, clean cloth, lens tissue, or cotton swab moistened sparingly with a commercial lens cleaner.

Note

Do not pour or spray liquid lens cleaner directly onto the lens.

5. Reinstall the Zoom Lens Assembly (4) on the Zoom Prism Bracket (5) as follows:
 - a. Engage the gimbal ring with the track in the Zoom Prism Bracket (5).
 - b. Pushing down slightly on the gimbal ring, push the Zoom Lens Assembly (4) back into the Reader-Scanner.



Specifications*

Class of Reader-Scanner	Desk-Top
Scanning-Process	Charge Couple Device Scanning Array
Machine Dimensions	37.9 in. (96.2 cm) high 31.1 in. (79.0 cm) deep 23.2 in. (59.0 cm) wide
Machine Weight	202 lb. (92 kg)
Shipping Dimensions	34.0 in. (86 cm) high 25.5 in. (64 cm) deep 43.5 in. (110 cm) wide
Power Requirements	120 VAC, 15 amperes, 60 Hz or 100 VAC, 15 amperes, 60 Hz or 200/220/240 VAC, 8 amperes, 50 Hz
Power Consumption	300 w maximum
Warm-Up Time	20 seconds
Agency Approvals	UL 478, CSA 220, VDE-RFI, FCC Part 15 Subpart J and 68, IEC 950
Operating Environment	60°F to 80°F (16°C to 27°C), 10 to 60%RH
Storage Temperature	-20°F to 140°F (-29°C to 60°C), 10 to 80%RH
Acoustic Noise Level per ANSI S1.29-1979	45 dbA in Standby 55.0 dbA in Print Cycle 65 dbA maximum peak
Thermal Load	3415 BTU/hr in Standby
Exposure Control	Preset
Scanning Speed	
200 DPI	2 seconds
300 DPI	3 seconds
Agency Approval	
AJ/BJ	UL 478, Safety FCC, 47 CFR Part 15, Subpart J, RFI DOC, RFI
AL/BL	TUV Rheinland per IEC 950, Safety VDE 0871, RFI

Power Strip 7710AJ/BJ only

Power Requirements	120VAC, 15 amperes, 60Hz
Circuit Type	Staged Hybrid Series, Sine Wave Tracking

TVSS Performance Specifications

Rated Single Pulse Transient Energy (10 x 1000 μ s) Joules	300/280
Maximum Single Pulse Transient Current (8 x 20 μ s) Amperes Peak	26,000/26,000
EMI-RFI Noise Reduction (@50-150 5K-5MHz - db)	50-60/30-35

**ANSI/IEEE C62.41-1980
Dynamic Clamping Voltages (V Peak) at
90° Performance Specifications**

Category A Ringwave (6kV, 200A, 100kHz)	185/352
Category B Ringwave (6kV, 500A, 100kHz)	210/364
Category B Impulse (6kV, 1.2 x 50 μ s, 3kA, 8 x 20 μ s)	310/384
UL 1449 (1987 Rev. 8 x 20 μ s @ 3kA) (L-N/L-G/N-G)	330/330/400

Physical Specifications

Operating Temperature Range	- 10 to 60°C
Storage Temperature Range	- 35 to 60°C (- 31 to 160°F)
Dimensions	13.25" (L) x 2.26" (W) x 1.25" (D)
Weight	1 lb. 13.4 oz.

Agency Approval	UL 1149 CSA
------------------------	----------------

7710 Reader-Scanner Options:**Zoom Lens (Ratio \pm 2%)**

6.5X to 14X 78-8059-6656-7
12X to 24X 78-8035-9032-8
14X to 32X 78-8035-9033-6
20X to 47X 78-8035-9034-4

Supplies

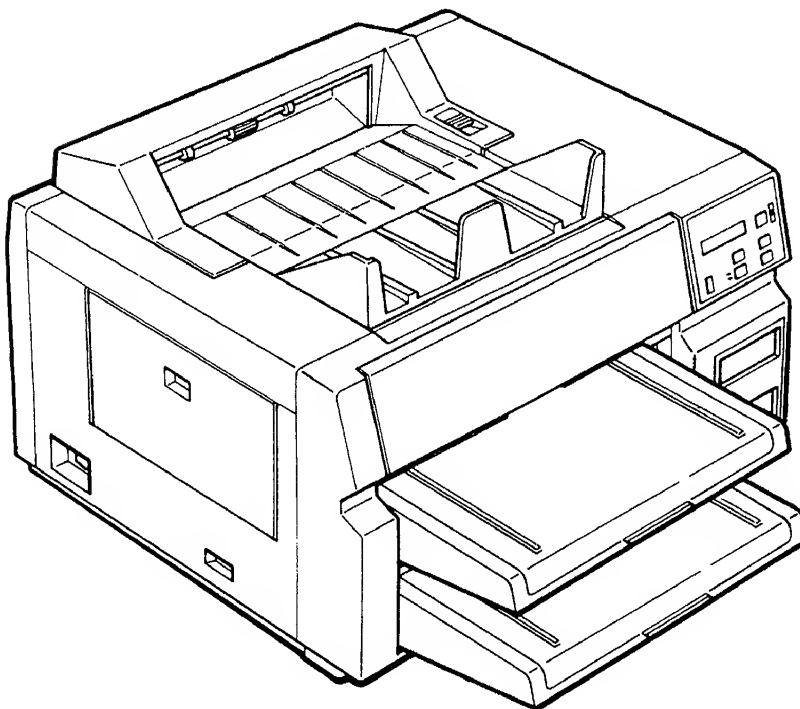
Non-permanent, red marking pen 00-0015-1135-1
7710 Parameter Macros Table 78-6970-4368-1

Communications Kit

Asynchronous Protocol Interface (API) 78-8049-3623-1

Table Of Contents

Operator Maintenance	LP-2
Adding Paper	LP-2
Replacing the Toner Cartridge and Cleaning Pad	LP-4
Replacing the Used Toner Collection Bottle	LP-8
Replacing the OPC Cartridge	LP-9
Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp ..	LP-11
Replacing the Separation Pawls	LP-15
Clearing a Paper Jam	LP-17
Changing the Line Fuse	LP-22
Specifications	LP-23



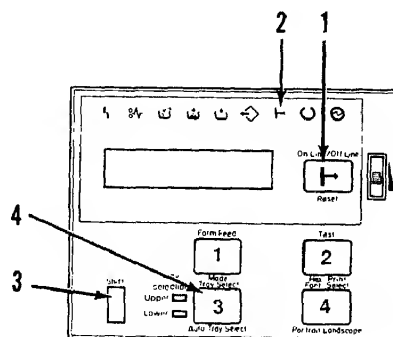
Operator Maintenance

Note

Internal components handled by the operator are colored green to help you locate them.

Each time the printer is switched ON:

- Press the **Online/Offline** (1) Switch to Offline. The Online/Offline Indicator (2) goes out.
- Press **Shift** (3) and **Tray Select** (4) to arm the printer to automatically switch from one paper tray to the other. The Upper Paper Tray Select Indicator (5) and the Lower Paper Tray Select Indicator (6) should both be lit. Otherwise, **Tray Select** must be pressed each time a paper tray runs out of paper.
- Press the **Online/Offline** (1) Switch to Online. The Online/Offline Indicator (2) lights.



Adding Paper

When the printer runs out of paper the 7941 Laser Printer Add Paper Indicator lights, the printer stops, and the 7960 Controller displays the message "Printer is out of Paper!". If the 7941 Message Display reads "UC LOAD LETTER" add paper to the Upper Paper Tray. If the display reads "LC LOAD LETTER" add paper to the Lower Paper Tray. The printer holds about 500 sheets of 20 lb paper. When the Upper Paper Tray is emptied paper is automatically fed from the Lower Paper Tray. As paper is fed from either paper tray, you can load the other paper tray. If you do run out of paper, press D on the 7960 Controller Keyboard and add paper to both trays. Press **any other key** to continue.

To add paper:

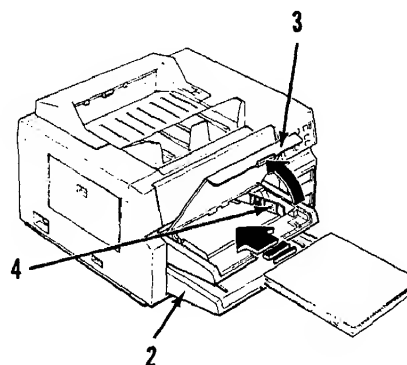
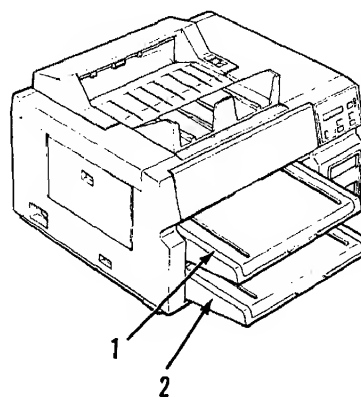
Note

You do not have to remove the Upper Paper Tray (1) to add paper to the Upper Paper Tray. However, you must remove the Lower Paper Tray (2) to add paper to the Lower Paper Tray. To remove the Upper Paper Tray simply grasp it with both hands, lift slightly, and pull straight out.

1. Raise the Paper Tray Cover (3). The Upper Paper Tray (1) or Lower Paper Tray (2) must first be removed to add paper to the Lower Paper Tray (2).

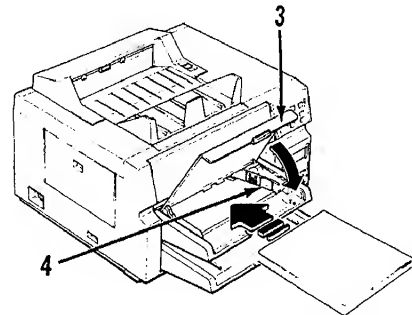
CAUTION

Do not add more than 250 sheets of 20 lb paper (such as 3M type 696 white bond paper (78-6969-6135-4) or any weight paper above the limit line on the Paper Guide (4). Paper jams and a burned out paper feed motor can result.



Adding Paper (continued)

2. Add paper to the paper tray. If the paper has a letterhead, place the letterhead facing up and to the rear.
3. Close the Paper Tray Cover (3).
4. Reinstall the paper tray if necessary.
5. Press any key on the 7960 Controller Keyboard to continue.



Replacing the Toner Cartridge and Cleaning Pad

When the 7941 Laser Printer Toner Indicator lights and the 7960 Controller displays the message you can continue to use the printer, but you should replace the toner cartridge and Cleaning Pad as soon as possible. You can expect about 3,000 pages at 5% print density (an average business letter). If you print denser pages (more type and/or more graphics per page) the cartridge will have to be replaced more often.



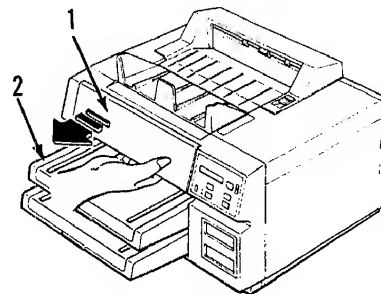
To replace the toner cartridge:

1. Press the Power Switch for the Laser Printer to the "0" (OFF) position.

CAUTION

Do not open the Developer Assembly (1) if the Upper Paper Tray (2) is not installed. The Upper Paper Tray serves as a support for the Developer Assembly preventing it from falling out of the printer.

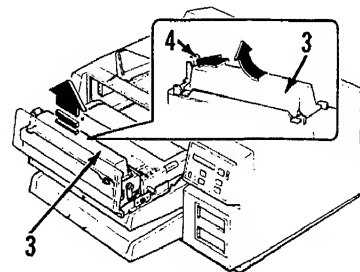
2. Firmly pull out the Developer Assembly (1) allowing it to slide within the tracks on the Upper Paper Tray Cover until it stops.



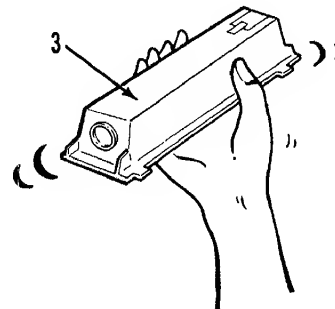
CAUTION

The OPC Cartridge is sensitive to light. You may find it good practice to cover the cartridge with a sheet of paper. For longer periods, remove the OPC Cartridge and seal it within the black protective bag.

3. Tap the spent Toner Cartridge (3) lightly on the top to reduce the possibility of scattering loose toner when the cartridge is removed.



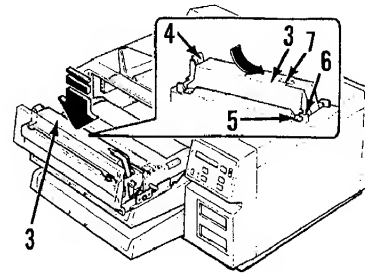
4. Push the green Lock Lever (4) to the left, then slide the empty Toner Cartridge (3) slightly to the left and lift it up and out.
5. Holding a new Toner Cartridge (3) horizontally, vigorously shake it for about 15 seconds.



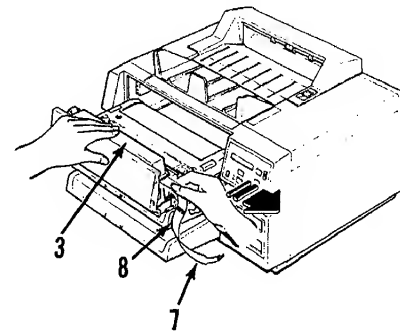
Replacing the Toner Cartridge and Cleaning Pad
(continued)**CAUTION**

Do not press down too hard on the Toner Cartridge (3).

6. Install the new Toner Cartridge (3) with the foil side down and the green Tab (4) to the right. Slide the Toner Cartridge to the right until the Cartridge Guides (5) stop against the Hopper Notches (6). Make sure the cartridge is firmly seated under the green Lock Lever (4).

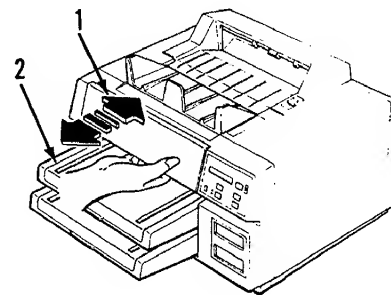


7. Holding the Toner Cartridge (3) with one hand, lift the green Tab (7) and pull it firmly to the right. When the second green Tab (8) appears, pull it until the seal is completely removed. Discard the seal and Tabs.

**CAUTION**

Do not remove the Toner Cartridge until the Toner Indicator lights. The cartridge acts as a cover to prevent stray toner from damaging the printer.

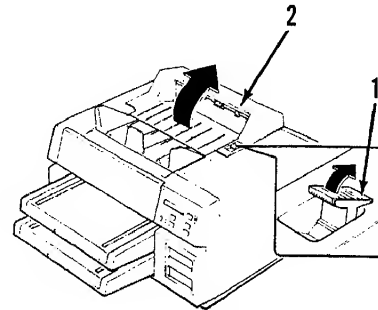
8. Close the Developer Assembly (1).



Replacing the Toner Cartridge and Cleaning Pad (continued)

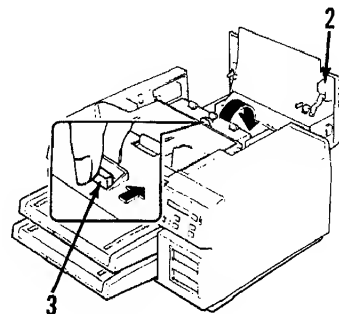
To replace the Cleaning Pad:

1. Lift the Release Lever (1) and tilt the Paper Exit Cover (2) back until held by its support.

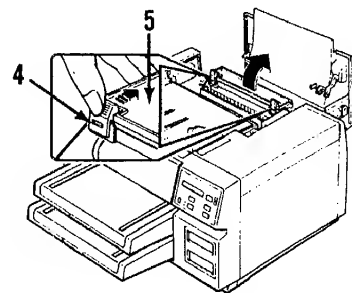


WARNING
THE FUSING ASSEMBLY IS HOT. ALLOW THE PRINTER
TIME TO COOL BEFORE OPENING.

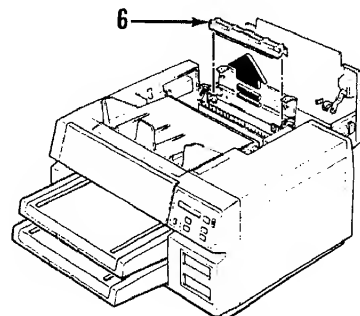
2. Squeeze the green Locking Lever (3) against the small brown raised frame and tilt the Fusing Assembly back toward the Paper Exit Cover (2).



3. Push back both green Locking Levers (4) and lift the Fusing Assembly Cover (5).

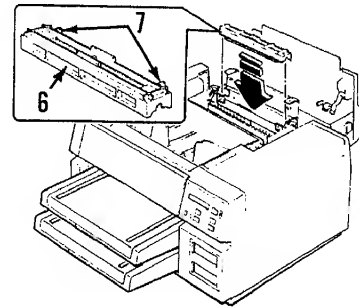


4. Lift the Cleaning Pad (6) straight up.



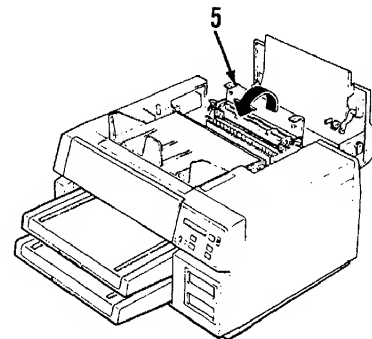
Replacing the Toner Cartridge and Cleaning Pad
(continued)

5. Install the new Cleaning Pad (6) with the Tabs (7) to the rear. The Cleaning Pad will only go in one way.



6. Vacuum any stray Toner, paper particles, and other debris from the feed, exit, and fusing areas of the printer.

7. Close the Fusing Assembly Cover (5). Push down on both Locking Levers (4) to secure.

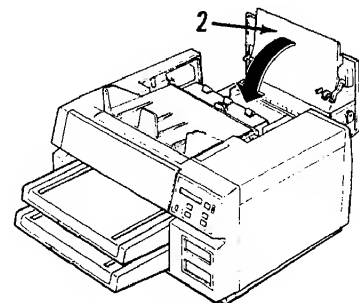


8. Pull the Fusing Assembly forward and push down until it latches.

Note

You may wish to clean the Separation Pawls at this time. See Cleaning the Separation Pawls, page LP-15.

8. Pull the Paper Exit Cover (2) forward and push down until it latches.

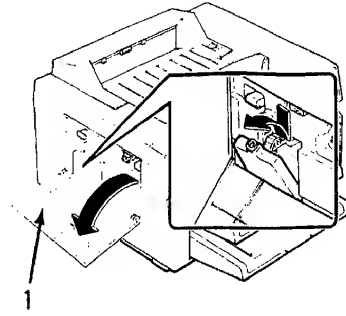


Replacing the Used Toner Collection Bottle

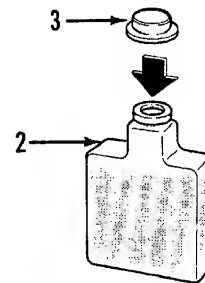
When the Used Toner Collection Bottle becomes full, COLLECTOR FULL is shown on the Message Display. You may find it more efficient to replace the Used Toner Collection Bottle each time you replace a Toner Cartridge.

To replace the Used Toner Collection Bottle:

1. Firmly pull open the Left Side Door (1).



2. Gently push the Used Toner Collection Bottle (2) down, tilt it slightly to the left, and lift out.

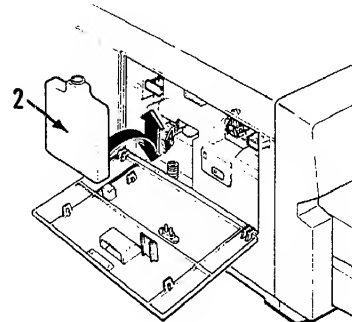


3. Place the Cap (3) from the new Used Toner Collection Bottle and place it on the full bottle of used toner. Dispose of the used toner as non-combustible waste.

CAUTION

Do not reuse toner. Used toner will damage the Developer Assembly.

4. Install the new Used Toner Collection Bottle (2). Position the new bottle at a slight angle, push down lightly, tilt to the right, and release into place.



5. Close the Left Side Door (1).

Replacing the OPC Cartridge

When the OPC (Organic Photo Conductor) Cartridge Indicator lights after about 8,000 prints, replace the OPC Cartridge, Charge and Transfer Corona Assemblies, and Shield Lens. Clean the Cleaning Lamp Assembly and Separation Pawls to maintain print quality. Print quality will deteriorate rapidly if printing continues without this maintenance.

To replace the OPC Cartridge:

1. Press the Power Switch to the "0" (OFF) position.

CAUTION

Do not pull out the Developer Assembly (1) without the Upper Paper Tray (2) in place. The Upper Paper Tray supports the Developer Assembly preventing it from falling out.

2. Firmly pull out the Developer Assembly (1), allowing it to be supported by the Upper Paper Tray (2). You may choose to move the Developer Assembly to the Workstand Table.

Note

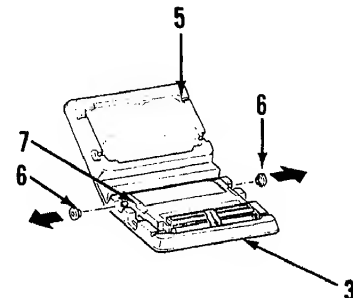
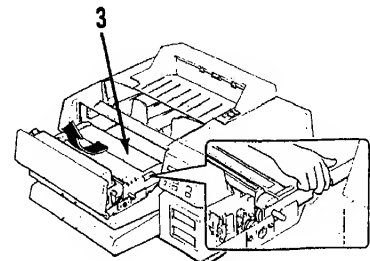
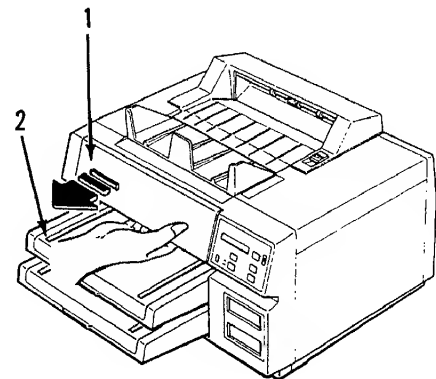
Dispose of the used OPC Cartridge as non-combustible waste.

3. Grasping the green handles on each side of the OPC Cartridge (3), lift the OPC Cartridge up and out.

CAUTION

Do not remove the OPC Cartridge (3) from its Protective Black Bag (4) or Protective Case (5) until ready to install. The cartridge is light sensitive and will degrade if exposed to light for more than five minutes.

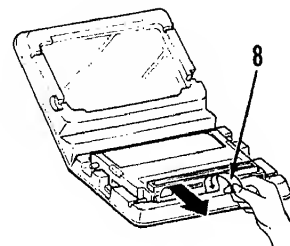
4. Unpack the new OPC Cartridge (3) from the Protective Black Bag (4). The word "UP" on the Protective Case (5) should face upward.
5. Lift the upper half of the hinged Protective Case (5), and remove and discard the Green Spacers (6) from the Rear Guide Pins (7) on the OPC Cartridge (3).



Replacing the OPC Cartridge (continued)**CAUTION**

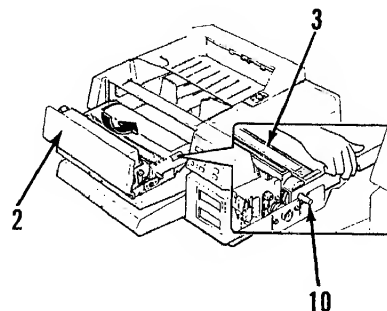
Do not use sharp instruments near the surface of the OPC Cartridge. Scratches can cause permanent damage to the cartridge.

6. Grasping the Tape (8), pull it as shown to remove the Protective Paper (9).

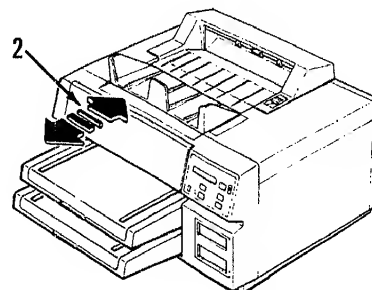
**CAUTION**

Do not touch the photo conductive surface of the print belt. Oils in your fingers will degrade the belt.

7. Holding the OPC Cartridge (3) by its green handles, align the Front Guide Pins (10) with the anchoring slots in the Developer Assembly (2) and push down.



8. Push in the Developer Assembly (2) firmly.



Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp

When the OPC (Organic Photo Conductor) Cartridge Indicator lights after approximately 25,000 prints, replace the OPC Cartridge, Charge Corona, Transfer Corona, and Shield Lens. Clean the Cleaning Lamp Assembly and Separation Pawls to maintain print quality. Print quality will deteriorate rapidly if printing continues without this maintenance.

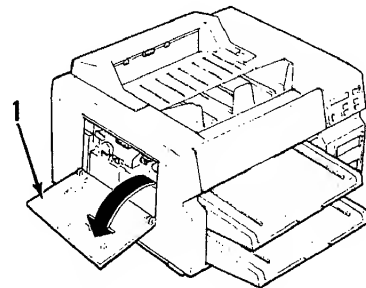


To replace the Charge Corona Assembly:

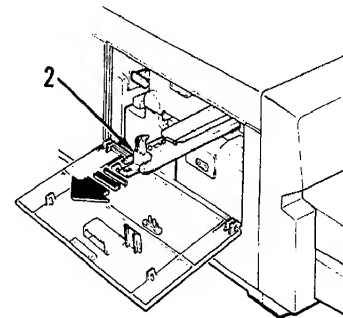
Note

The Charge Corona and Transfer Corona are interchangeable.

1. Firmly pull open the Left Side Door (1).



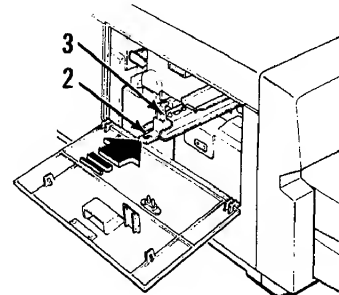
2. Grasp the green handle of the Charge Corona (2) and gently pull it straight out.



CAUTION

Do not touch the corona wire. Fingerprints will degrade the protective coating and cannot be cleaned.

3. With the Alignment Key (3) up, position the new Charge Corona (2) and push in firmly until seated.



Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp

(continued)

To replace the Transfer Corona Assembly:

Note

The Charge Corona and Transfer Corona are interchangeable.

1. Gently push down on the Used Toner Collection Bottle (1) to release it, then lift it out at a slight angle. You may wish to place a Cap on the Used Toner Bottle to prevent spillage.

Note

Do not discard the Used Toner Collection Bottle. It will be reinstalled after the Transfer Corona Assembly is replaced.

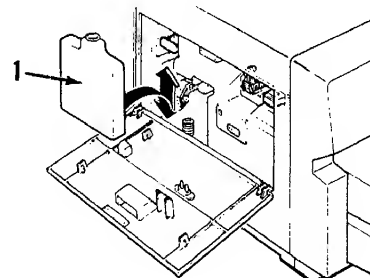
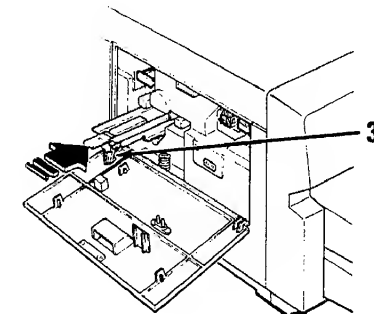
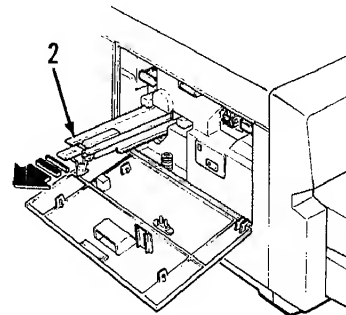
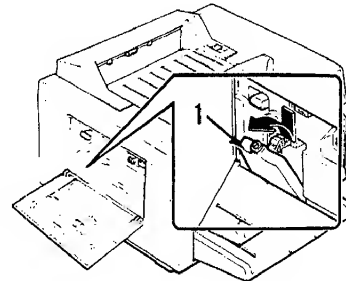
2. Pull out the green handle of the Transfer Corona Assembly (2).

CAUTION

Do not touch the corona wire. Fingerprints will degrade the protective coating and cannot be cleaned.

3. With the Alignment Key (3) down, position the new Transfer Corona Assembly (2) and push in firmly until seated.

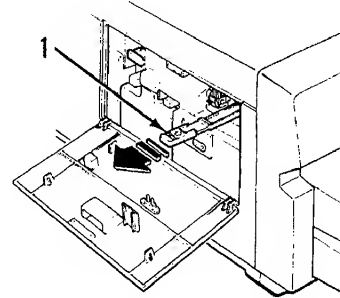
4. Reinstall the Used Toner Collection Bottle (1). Remove the Cap if you wanted to prevent spillage.



Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp
(continued)

Replacing the Shield Lens

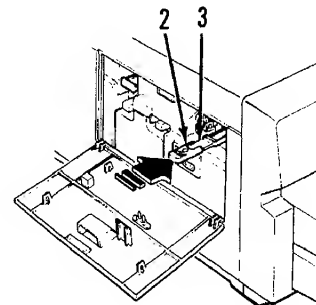
1. Gently pull the green handle of the Shield Lens (1) straight out.



CAUTION

Do not touch the glass. Fingerprints cannot be cleaned off degrading the quality of the prints.

2. Install the new Shield Lens (2) with the small Foam Pad (3) up. Firmly push in until the Shield Lens seats.

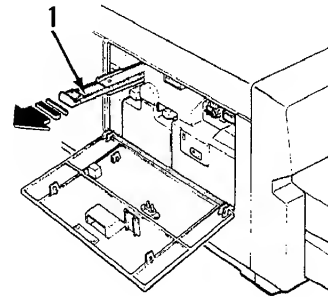


Replacing the Charge Corona, Transfer Corona, and Shield Lens, and Cleaning the Cleaning Lamp

(continued)

Cleaning the Cleaning Lamp Assembly

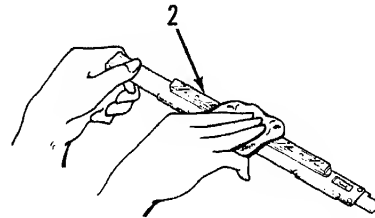
1. Grasping the green handle of the Cleaning Lamp Assembly (1), gently pull it straight out.



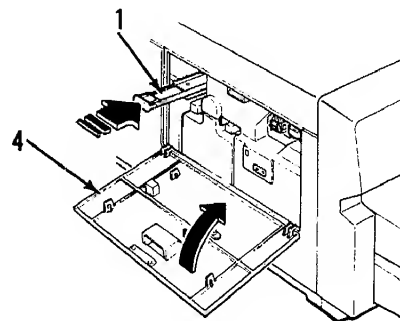
CAUTION

Do not use any type of liquid to clean the Cleaning Lamp.

2. Turn the Cleaning Lamp over and wipe the Clear Cover (2) with a soft dry cloth. The Clear Cover protects the lamps.



3. With the Cleaning Lamp Cover (2) facing down, reinstall the Cleaning Lamp Assembly (1) firmly pushing in until it is seated.



4. Close the Left Side Door (4).

Cleaning the Separation Pawls

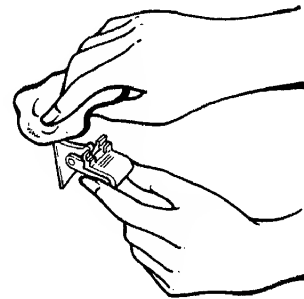
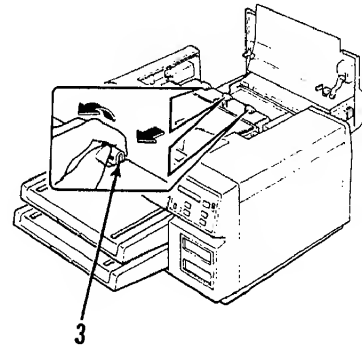
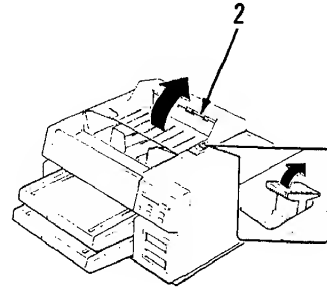
When stripes appear at the edge of printed pages or frequent paper jams occur at the exit, you may need to clean the Separation Pawls in the Fusing Assembly. You may find it efficient to clean the Separation Pawls each time you replace the Cleaning Pad.

To Clean the Separation Pawls:

WARNING

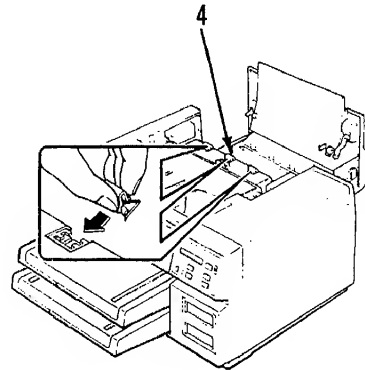
THE FUSING ASSEMBLY IS VERY HOT. TO PREVENT BURNS, SWITCH OFF THE POWER AND ALLOW THE PRINTER TO COOL FOR AT LEAST 30 MINUTES BEFORE OPENING THE FUSING ASSEMBLY. DO NOT OPEN THE COVER WHILE COOLING. EXTENDED EXPOSURE TO LIGHT MAY DAMAGE THE OPC CARTRIDGE.

1. Press the Power Switch to the "0" (OFF) position.
2. Lift the Release Lever (1) for the Paper Exit Cover (2).
3. Tilt the Paper Exit Cover (2) back until it is held by its support.
4. Remove all three Separation Pawls (3) by pushing firmly each green handle toward the small brown raised frame and lifting upwards.
5. Clean the body and leading edge of each pawl with a soft clean cloth.

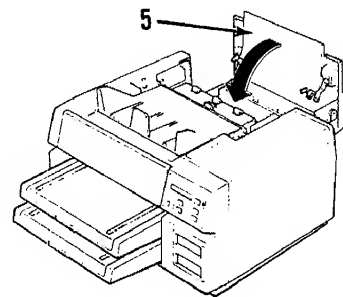


Cleaning the Separation Pawls (continued)

6. Replace the pawls in the Fusing Assembly by inserting the leading edge of each handle towards the small brown raised frame into the assembly first and then pressing the handle towards the frame firmly and down.



7. Close the Paper Exit Cover (5) until it latches.



Clearing a Paper Jam

When one of four types of paper jam occurs, the Paper Jam Indicator flashes. When the Printer displays **MISFEED UPPER** the paper jam is in the upper paper feed area. When the Printer displays **MISFEED LOWER** the paper jam is in the lower paper feed area. When the Printer displays **JAM AT TRANSFER** the paper jam is near the Transfer Corona. When the Printer displays **JAM AT EXIT** the paper jam is at the exit. If another message appears; see Troubleshooting, page .

**CAUTION**

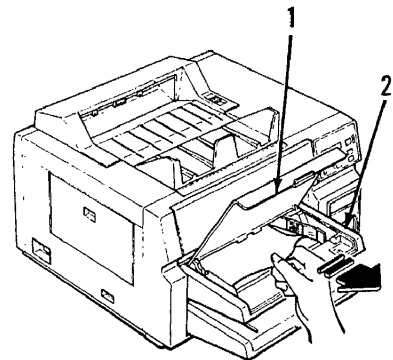
If you tear paper while clearing a jam, always be sure to remove all fragments. Failure to remove all of the paper may result in damage to the printer mechanism.

To clear a paper jam in the upper paper feed:

1. Press **D** on the 7960 Controller Keyboard to disable printing.
2. Lift the Upper Paper Tray Cover (1).
3. Remove the paper misfeed by pulling it firmly toward the front being careful not to tear the paper.

Note

If the misfed paper cannot be removed, remove the Upper Paper Tray (2) to gain better access. Grasp the Upper Paper Tray with both hands, lift up slightly, and pull straight out.



4. Close the Upper Paper Tray Cover (1) and reinstall the Upper Paper Tray (2) if needed.
5. Press **any** key on the 7960 Controller Keyboard to resume printing.

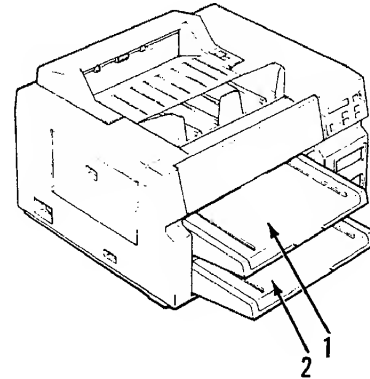
Clearing a Paper Jam (continued)

To clear a paper jam in the lower paper feed:

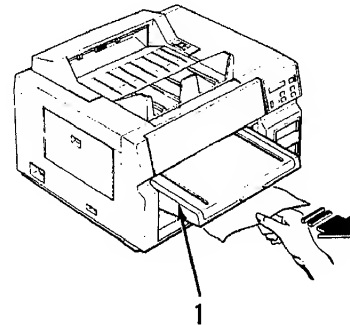
Note

You may wish to remove the Upper Paper Tray (1) for easier access.

1. Press **D** on the 7960 Controller Keyboard to disable printing.
2. Grasping the Lower Paper Tray (2) with both hands, lift it up slightly and pull straight out.
3. Remove the paper misfeed by pulling it firmly toward the front being careful not to tear the paper.



4. Close the Lower Paper Tray Cover and reinstall the Lower Paper Tray if needed.
5. Reinstall the Upper Paper Tray (1) if removed.
6. Press **any key** on the 7960 Controller Keyboard to resume printing.



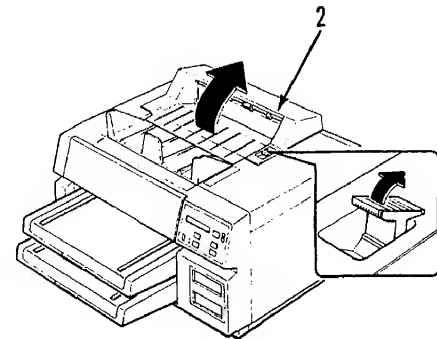
Clearing a Paper Jam (continued)

To clear a paper jam at the Transfer Corona or exit:

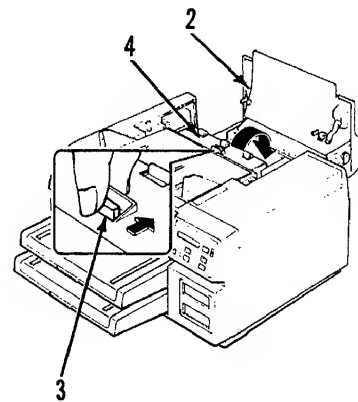
WARNING

THE FUSING ASSEMBLY IS VERY HOT. TO PREVENT BURNS, SWITCH OFF THE POWER AND ALLOW THE PRINTER TO COOL FOR AT LEAST 30 MINUTES BEFORE OPENING THE FUSING ASSEMBLY. DO NOT OPEN THE COVER WHILE COOLING. EXTENDED EXPOSURE TO LIGHT MAY DAMAGE THE OPC CARTRIDGE.

1. Press **D** on the 7960 Controller Keyboard to disable printing.
2. Lift the Release Lever (1) and tilt the Paper Exit Cover (2) back until held by its support.

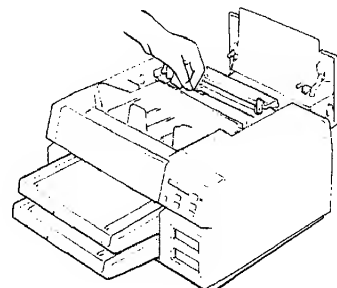


3. Squeeze the green Locking Lever (3) against the small brown raised frame and tilt the Fusing Assembly (4) back toward the Paper Exit Cover (2).



Clearing a Paper Jam (continued)

4. Ensure the Upper Paper Tray is in place and pull out the Developer Assembly slightly to prevent the jammed paper from scratching the OPC Cartridge.

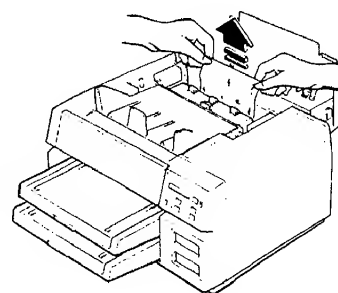
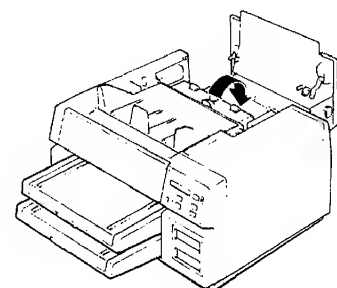


5. Remove the paper misfeed ensuring that all paper fragments have been removed.

CAUTION

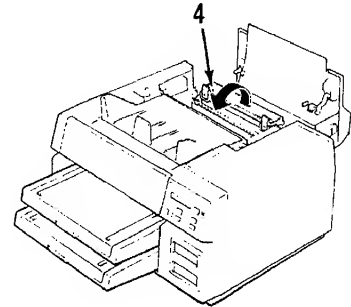
If a paper fragment cannot be seen, remove the Developer Assembly taking care to shield it from light by placing a few sheets of paper over it. If the paper jam can not be removed within 4-5 minutes, remove the OPC cartridge and place it in its protective case and bag. If you remove the Upper Paper Tray, be sure to reinstall it before reinstalling the Developer Assembly.

6. If the paper jam is in the exit area, carefully pull the paper out ensuring that no fragments remain.



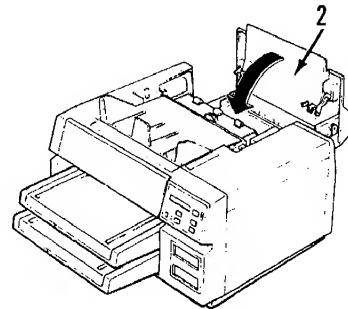
Clearing a Paper Jam (continued)

7. Pull the Fusing Assembly (4) toward you and push down to secure.



8. Pull the Paper Exit Cover (2) toward you and push down to latch.

9. Reinstall the Upper Paper Tray, OPC Cartridge, and Developer Assembly if necessary.



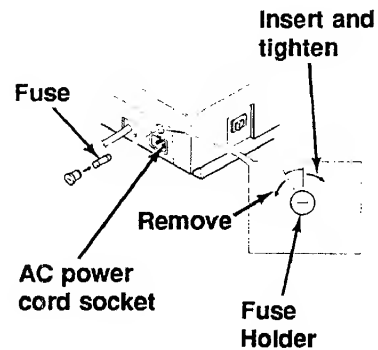
10. Press **any** key on the 7960 Controller Keyboard to resume printing.

Replacing the Line Fuse

Before replacing a fuse, make sure that the replacement is of the correct rating (time delay fuse)- 10A/250V for the 100-120V BL model or 5A/250V for the 220-240V BJ model. Replace the fuse as follows:

1. Remove the Fuse Holder at the rear of the printer by turning it 30° counter-clockwise.

2. Remove the blown fuse from the holder and replace it with a new, good fuse.



3. Reinsert the Fuse Holder, push in and tighten with a 30° clockwise turn.

Specifications

The following are typical specifications for the Laser Printer:

Type:	Desk Top
Dimensions:	16.6 in. x 21.3 in. x 18.5 in. (421 mm x 540 mm x 470 mm) including paper input tray and paper output tray
Weight:	88 lb (40 kg) average
Development Process:	Dry Electrophotographic
Paper Size:	Letter 8-1/2 in. x 11 in. Legal Half-Letter A4
Paper Weight:	16 lb to 24 lb (60 g/m ² to 90 g/m ²)
Print Speed:	15 pages/minute (12 sec for first print) Letter or A4
Warm-Up Time:	90 seconds
Paper Feed:	Two-stage automatic paper feed
Paper Stacker Capacity:	500 sheets of 20 lb (75 g/m ²)
Print Delivery:	Face-down, offset stacking (Job separation)
Print Resolution:	300 x 300 dots/inch (11.8 dots/mm)
Power Source:	100 to 120 V 50/60 Hz 220 to 240 V 50 Hz
Power Consumption	800 W
Operating Temperature:	50°F to 90°F (10°C to 32°C) @ 20% to 80% RH
Storage Temperature:	-40°F to 140°F (-40°C to 60°C @ 5 to 95% RH non-condensing
Noise Level @ Standby:	48 db(A)
Noise Level during printing:	55 db(A)

Supplies

Toner Kit 78-6969-7530-5	2 Toner Cartridges (150 g/unit) 1 Toner Collection Bottle 1 Toner Collection Bottle Cap 2 Cleaning Pads
OPC Kit*	1 OPC Cartridge 1 Shield Lens 2 Corona Assemblies
Bond Paper 78-6969-6135-4	Type 696, white, 500 sheets, 8-1/2 by 11 in.

* Order from your local Ricoh Authorized Supplies Distributor/Wholesaler.

Agency Approval

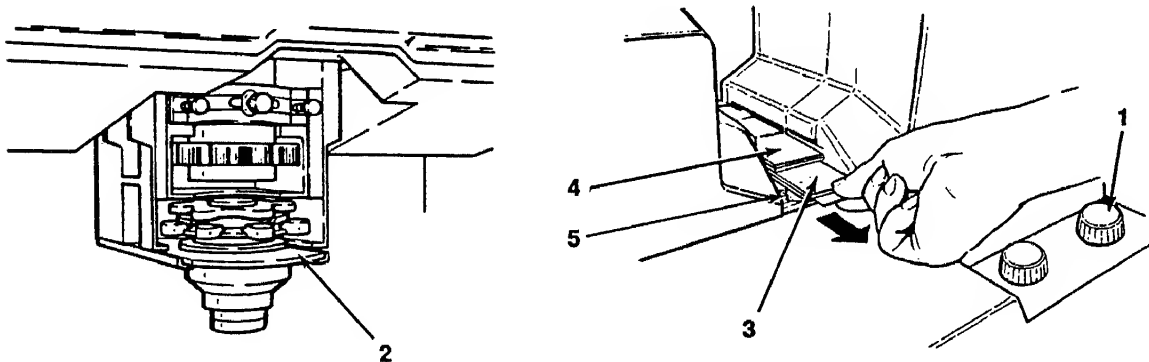
AFD

UL 478, Safety
CSA, Safety
FCC 47CFR Part 15, RFI
DOC, RFI
CDRH 21 CFR, Laser

Table Of Contents

Cleaning the Glass Flats	CF-2
Cleaning the Drive Roller	CF-3
Installing the 210 CAT	CF-4
Removing the 210 CAT	CF-5
Removing a Jammed Film Cartridge	CF-6
Repairing Broken or Detached Film	CF-7
Specifications	CF-10
Leaders and Trailers	CF-11

Cleaning the Glass Flats



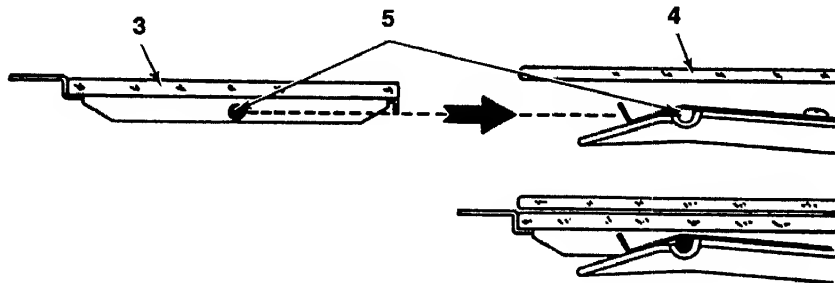
When images displayed on the Viewing Screen or prints appear spotted:

1. Remove the film cartridge from the 210 CAT. Turn the Film Speed Control (1) counterclockwise until the film runs out.
2. Turn the Film Speed Control (1) to the "0" position.
3. Remove the Zoom Lens Assembly (2) by pulling it straight towards you.
4. Remove the Lower Glass Flat (3) by pulling it straight towards you.
5. Clean both sides of the Lower Glass Flat (3) and the non-removable Upper Glass Flat (4) with any commercial lens cleaner and a soft, clean cloth or tissue.

Note

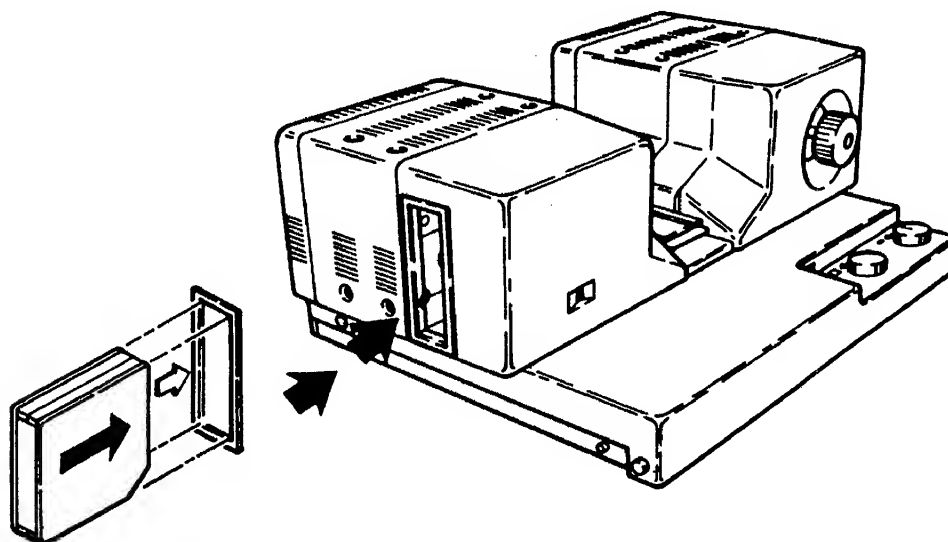
The blue side of the handle faces up.

6. Reinstall the Lower Glass Flat (3) by positioning it beneath the Upper Glass Flat (4) and pushing straight back until both pins (5) engage.



Cleaning the Drive Roller

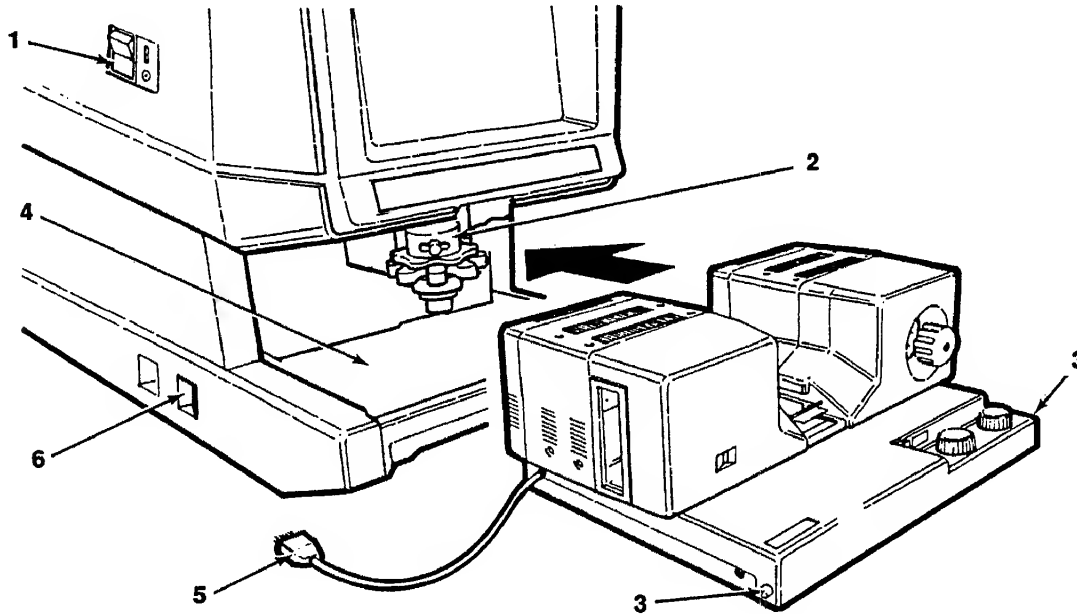
The Drive Roller should be cleaned periodically or whenever film doesn't load (Error Code 2XXX). The easiest method of cleaning the Drive Roller is with a 3M Cleaning Cartridge (78-8012-6574-1).



Note

The foam disk may be turned as it becomes soiled to expose a clean area.

1. Moisten the exposed area of foam where indicated on the Cleaning Cartridge with two drops of water or glass cleaner.
2. Insert the Cleaning Cartridge into the Cartridge Insertion Slot as shown. As the 210 CAT attempts to thread film, the Drive Roller is pressed against the Cleaning Cartridge for two cycles and the cartridge then ejected.
3. Ignore the Error Code 2310 and push in the Cleaning Cartridge as many times as necessary until film again loads properly. Wait a few minutes to allow the Drive Roller to dry.

Installing the 210 CAT

When changing from viewing microfiche or roll film to 16 mm cartridge film:

1. Press the 7710 Reader-Scanner Power Switch (1) to the "0" (OFF) position.
2. Remove the Zoom Lens Assembly (2) by grasping the handle and pulling it straight towards you.

Note

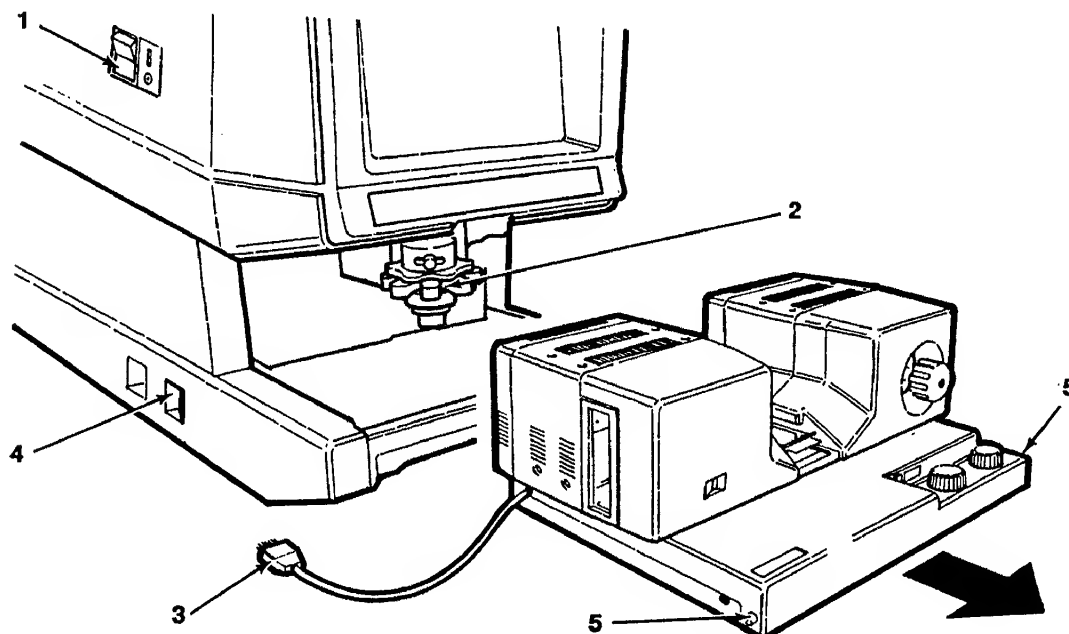
If the 110 RFT is being removed, disconnect the System Cable from the System Connector.

3. Depress the Transport Release Buttons (3) and pull the film transport straight towards you.
4. Place the 210 CAT on the Accessory Table Assembly (4).
5. Push the 210 CAT all the way back until the latches engage.
6. Plug the System Cable (5) into the System Connector (6).

Note

Avoid getting fingerprints on the surfaces of the glass lenses.

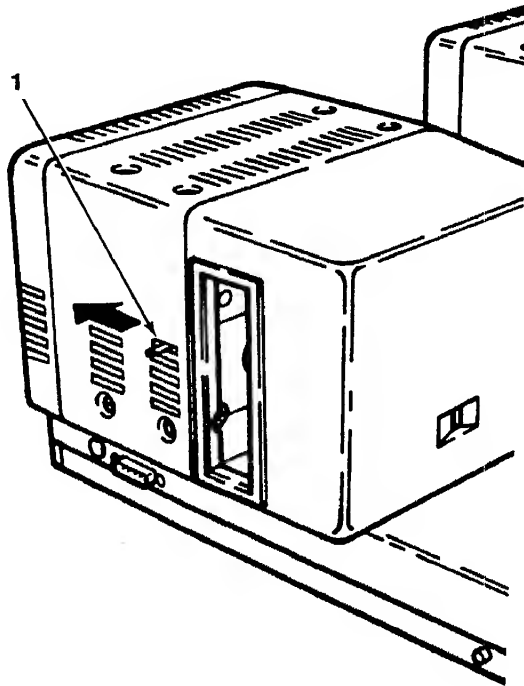
7. Reinstall the Zoom Lens Assembly (2) on the 7710.

Removing the 210 CAT

When changing from viewing cartridge film to microfiche or 16 mm or 35 mm roll film:

1. Press the 7710 Power Switch (1) to the "0" (OFF) position.
2. Grasp the handle of the Zoom Lens Assembly (2) and pull it straight towards you.
3. Disconnect the System Cable (3) from the System Connector (4).
4. Depress the Transport Release Buttons (5) and pull the 210 CAT straight towards you.

Removing a Jammed Film Cartridge



If a film cartridge was not automatically ejected after rewinding film, a broken film strip needs to be spliced, or film has detached from the spool:

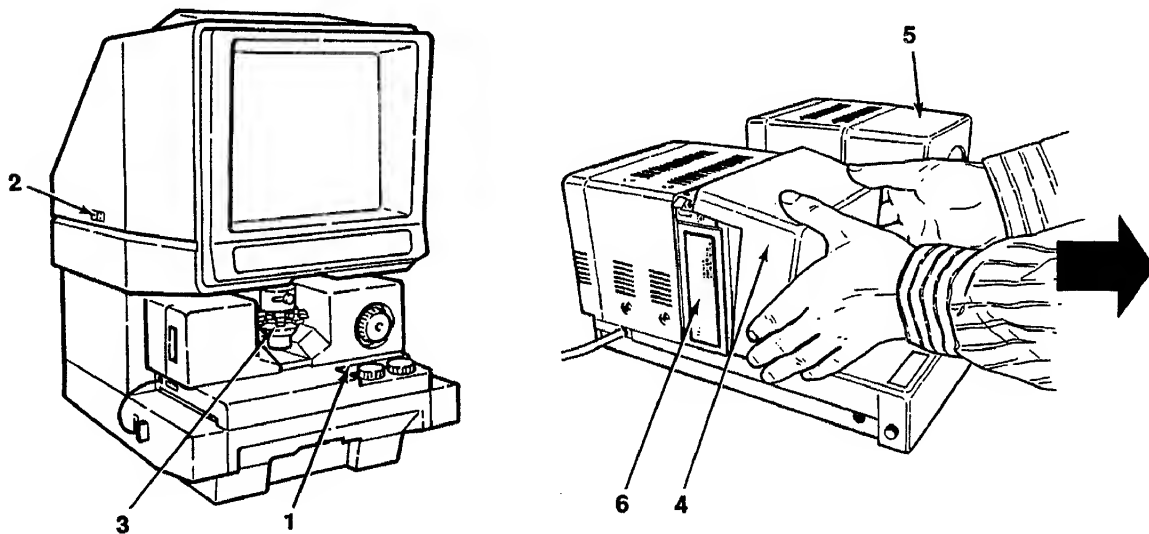
Note

Do NOT switch off the power.

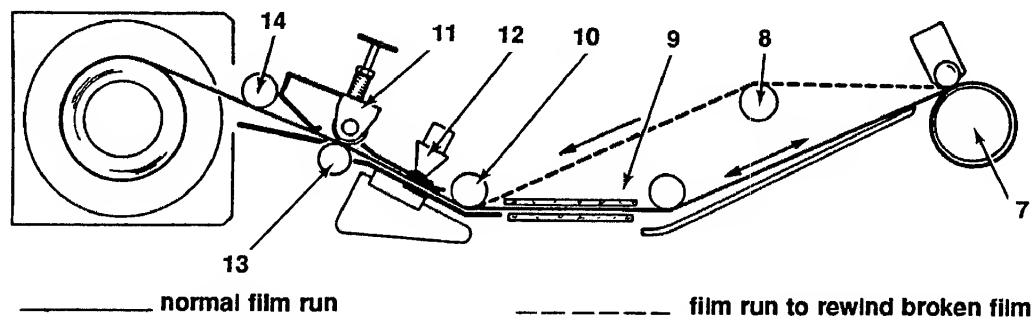
1. Push the blue Cartridge Release Lever (1) to the rear until the unit begins to cycle. The film cartridge should eject after 1 or 2 seconds.
2. If, after cycling, the cartridge still does not eject, push the lever fully to the rear and manually remove the film cartridge.

Repairing Broken or Detached Film

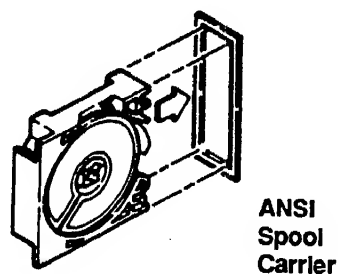
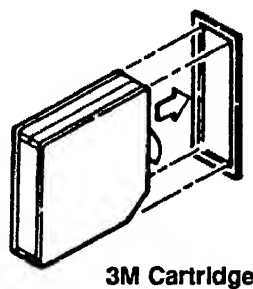
If the Error Code Display (1) flashes "1706", the film broke or detached from the Film Cartridge during a search or rewind operation. The film in the cartridge will automatically rewind but film wound onto the Film Take-Up Reel must be manually pulled backed and spliced or reattached to the Spool Hub of the cartridge. To rewind the broken film:



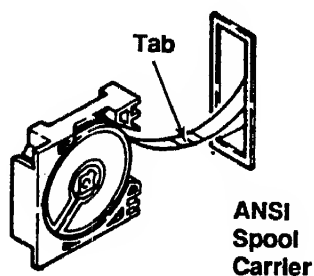
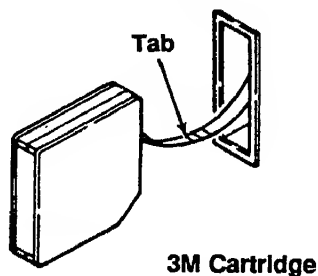
1. Press the 7710 Reader-Scanner Power Switch (2) to the "0" (OFF) position.
2. Remove the Zoom Lens Assembly (3) by grasping the handle and pulling it straight towards you.
3. Remove the Left Front Cover (4) and the Right Front Cover (5) by grasping each cover in turn and pulling it straight towards you.
4. Remove the Film Cartridge (6). If the cartridge was not ejected, see Removing a Jammed Cartridge, page CF-6 first.

Repairing Broken or Detached Film (continued)

5. Take the end of the broken film from the Film Take-Up Reel (7) and thread it as shown over the Broken-Film Roller (8) and Upper Glass Flat (9) and under the Left Film Guide Roller (10).
6. Lift the Spring-Loaded Film Guide (11) and push the broken film through the Sensor Assembly (12) between the Spring-Loaded Film Guide (11) and Left Film Guide Roller (13), below the left Film Roller (14) and out the Cartridge Insertion Slot.
7. Position the Film Cartridge as for insertion into the machine.

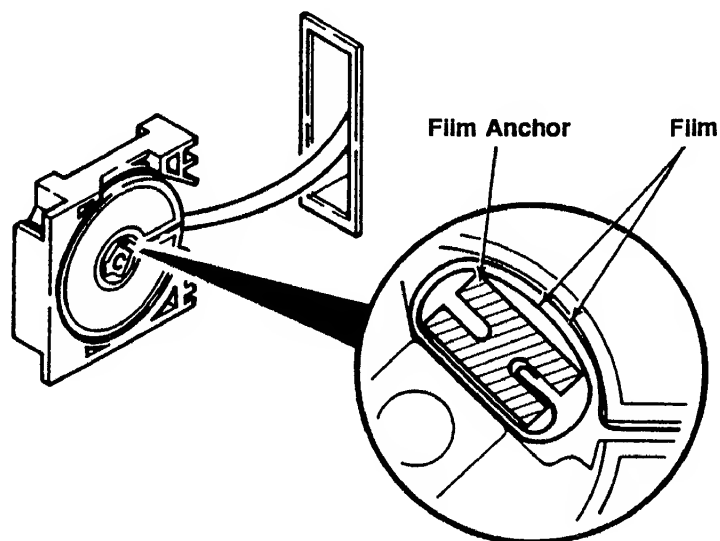
**Broken Film**

- 8a. Take the end of the broken film from the Film Cartridge and the end of the broken film from the Film Take-Up Reel and butt the two ends together making sure the film is not twisted.
- 9a. Splice the film ends together with clear Splicing Tabs.
- 10a. Go to **Rewinding Film**, Step 11 on the next page.



Repairing Broken or Detached Film (continued)**Detached Film—ANSI Film Cartridge**

- 8b. Make sure the film is not twisted, then wrap the end of the film twice around a Film Anchor.
- 9b. Insert the film through the slot in the Spool Hub and press the Anchor into the hub tapered end first. See Leaders and Trailers, page CF-11.
- 10b. Go to **Rewinding Film**, Step 11 below.

**Detached Film—3M Film Cartridge**

- 8c. Splice a detached film end onto the Trailer with Splicing Tabs. See Leaders and Trailers, page CF-11.
- 9c. Reattach a Trailer to the reel with double-backed adhesive tape. See Reattaching a 3M Cartridge Trailer, page CF-11.
- 10c. Go to **Rewinding Film** Step 11 below.

Rewinding Film

- 11. While turning the Manual Film Scan Control clockwise to take up film slack, push the Film Cartridge into the Cartridge Insertion Slot until it latches.
- 12. Continue to turn the Manual Film Scan Control clockwise until all film slack has been removed and film is again pulled out of the Film Cartridge.
- 13. Press the 7710 Power Switch to the "1" (ON) position. The film will automatically rewind into the Film Cartridge.

Specifications***Machine Characteristics****Machine Dimensions**

Height	6.9 in (175 mm)
Width	19.7 in (500 mm)
Depth	14.4 in (365 mm)

Shipping Dimensions

Height	16.3 in (415 mm)
Width	25.6 in (650 mm)
Depth	22.0 in (560 mm)

Machine Weight	22 lb (10 kg)
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Shipping Weight	24 lb (11 kg)
-----------------	---------------

Agency Approvals	UL, CSA, VDE, and fulfills the requirements regarding interference according to Directive 82/499/ECC and DBP 1046/1984
------------------	------------------------------------------------------------------------------------------------------------------------

Power Requirements	Supplied by Reader-Scanner: 27 VAC, 3.8 A, 50/60 Hz according to IEC 380 Sec. 2.2.18
--------------------	--------------------------------------------------------------------------------------

Power Consumption	80 watts average
-------------------	------------------

Film Capacity	16 mm and 35 mm width 2.5 mil to 5.7 mil thick 221 ft (67.5 m) length (2.5 mil) Diazo, Dry Diazo, Vesicular, Silver Halide Positive or negative
---------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------

Film Speed	10 ft/sec (3 m/sec) maximum 0.2 in/sec (4.5 mm/sec) minimum
------------	----------------------------------------------------------------

Operating Environment	60°F to 80°F (15.6°C to 26.7°C), 20 to 60% RH
-----------------------	-----------------------------------------------

Storage Environment	14°F to 122°F (-10°C to 50°C), 10 to 80% RH
---------------------	---------------------------------------------

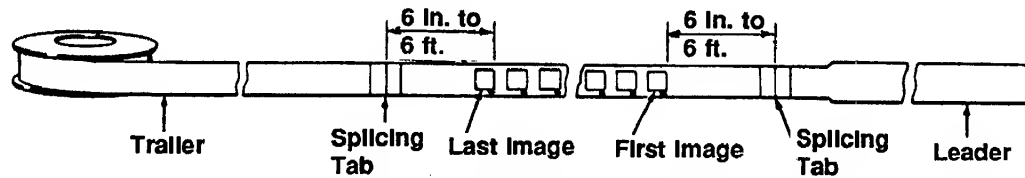
Noise Emission	70 dbA maximum
----------------	----------------

* All values are typical.

Agency Approvals

UL 114, Safety
CSA C22, 2 No 143, Safety
VDE 380, Safety
FCC 47 CFR Part 15, RFI
VDE 0871 "B" RFI

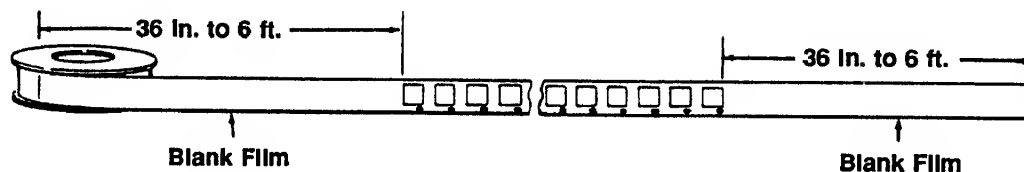
Leaders and Trailers - 3M Cartridge:



Notes

1. Use either clear leader (78-8000-2580-7) or opaque leader (78-8000-8759-1).
2. Use opaque splice for trailer on films with clear background.
3. Typical length of film in a cartridge: 100 feet for film of 5 mil thickness. 200 feet for film of 2.5 mil thickness.

ANSI Spool Carrier:



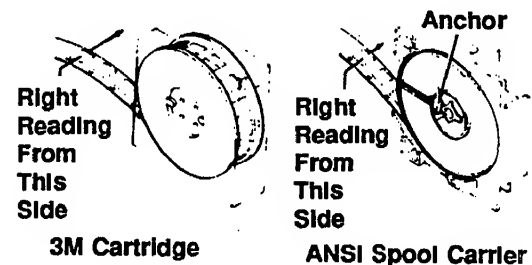
Note

A leader strip can be used, if desired, spliced on a minimum of 6 inches from the closest image.

Winding Film on the Spool

Film must be wound on spools so that images are "right-reading" as shown at the right.

- For 3M Cartridges: Splice the end of the film to the trailer attached to the spool hub.
- For ANSI Spool Carriers: Lock the trailing end of the film to the spool hub with an Anchor.



Reattaching a 3M Cartridge Trailer

Use the following procedure to reattach a trailer that has pulled loose from the Reel Hub of a 3M Film Cartridge:

Note

If the trailer is less than 30 inches long, do not reattach it. Obtain a new cartridge with attached trailer.

1. Remove two Phillips Head Screws and disassemble the cartridge.
2. Wrap the Hub with double-backed adhesive tape.
3. Trim the trailer end as shown at the right.
4. Insert the trimmed strip of trailer through both slots in the reel.
5. Push the end of the trailer against the double-backed adhesive tape and wrap the trailer around the reel.
6. Reassemble the 3M Film Cartridge.

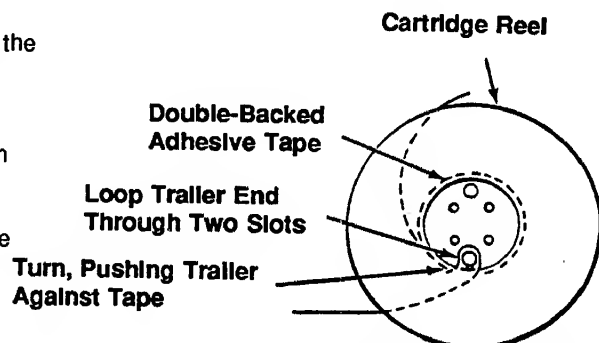
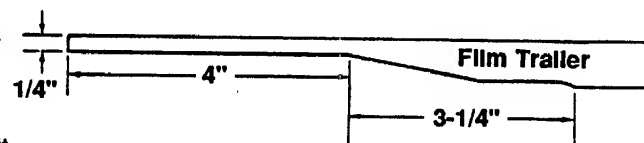
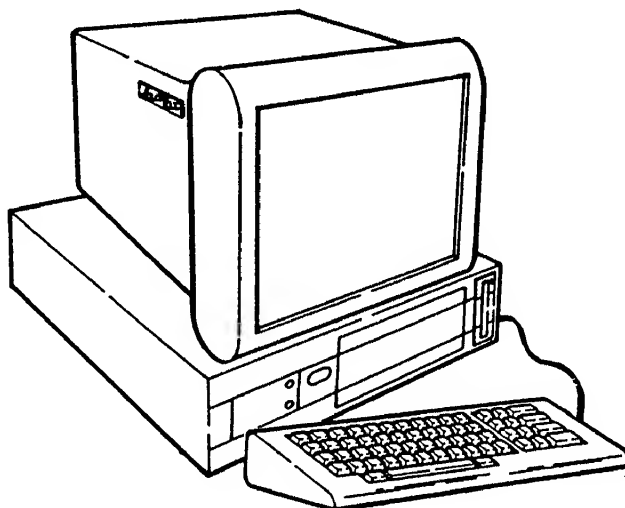


Table of Contents

Introduction	FC-2
Selecting Options from the Main Menu	FC-3
Transferring Images from the 7710 to the 7960 Controller	FC-4
FAXing a Document Package	FC-6
Variations in the FAXing Process	FC-6
Manual and On-Line Systems	FC-6
Sending a Document Package to Multiple Locations	FC-6
The MMMFAX Configuration File	FC-6
FAXing with Manual Systems--Creating the Cover Sheet	FC-7
General Concepts	FC-7
Cover Sheet Format	FC-9
Receiver and Sender Fields	FC-10
Subject Field	FC-10
Delayed Delivery Field	FC-10
Additional Subject Paragraph	FC-11
Broadcast Cover Sheet	FC-12
Tagging Records from the Receiver Phone List for Broadcast	FC-14
FAXing with On-Line Systems	FC-15
Initiate On-Line FAX	FC-15
Temporarily Interrupting Step or Auto-Scanning	FC-15
Creating and Editing FAX Receiver and Sender Phone Lists	FC-16
Status of FAX Queues	FC-18
Status of Processed Queue	FC-19
Status of Pending Queue	FC-21
Options Management Menu	FC-23
Printing the Processed Queue Stats	FC-23
Backing Up the Phone List Files	FC-24
Restoring the Phone List Files	FC-25
Changing the MMMFAX Configuration File	FC-26
Formatting a Backup Diskette	FC-32
Specifications	FC-33
Controller	FC-33
Monitor	FC-34



Introduction

The 7960 Controller allows you to:

Transfer Images from the 7710 Reader-Scanner to the 7960 Controller

- Manually transfer images (see Transferring Images from the 7710, page FC-4).
- Automatically transfer images if your system is linked to a host computer (see FAXing with On-Line Systems, page FC-15, and tabbed section "PAGE SEARCH", Operating in a Computer Communications Setup, page PS-46).

Create Cover Sheets and Send FAX Transmissions

- Fill in a Cover Sheet for FAXing to a single location (see FAXing with Manual Systems--Creating the Cover Sheet, page FC-7).
- Fill in a Cover Sheet for FAXing to a single location with multiple FAX machines (see Sending a Document Package to Multiple Locations, page FC-6).
- Fill in a Cover Sheet for FAXing to multiple locations (see Broadcast Cover Sheet, page FC-12).

Manage Receiver and Sender Phone Lists

- Create and edit phone lists of receivers and senders (see Creating and Editing FAX Receiver and Sender Phone Lists, page FC-16).
- Transfer receiver and sender records to the Cover Sheet (see FAXing with Manual Systems--Creating the Cover Sheet, page FC-7).
- Transfer receiver records for broadcasting a document package to several locations (see Tagging Records from the Receiver Phone List for Broadcast, page FC-14).

Check the Status of Document Packages

- Get a quick look at the number of pending and processed document packages (see Status of FAX Queues, page FC-18).
- Examine the status of document packages that have been created but are pending transmission (see Status of Pending Queue, page FC-21).
- Examine the status of document packages that have been sent or processed (see Status of Processed Queue, page FC-19).

Perform Miscellaneous Tasks

- Print the contents of the status log file (see Printing the Processed Queue Stats, page FC-23).
- Backup a Phone List File (see Backing Up the Phone List Files, page FC-24).
- Restore a Phone List File (see Restoring the Phone List Files, page FC-25).
- Format a Backup Diskette (see Formatting a Backup Diskette, page FC-31).

Review and Edit the MMMFAX Configuration File

- Modify operating parameters (see Changing the MMMFAX Configuration File, page FC-26).

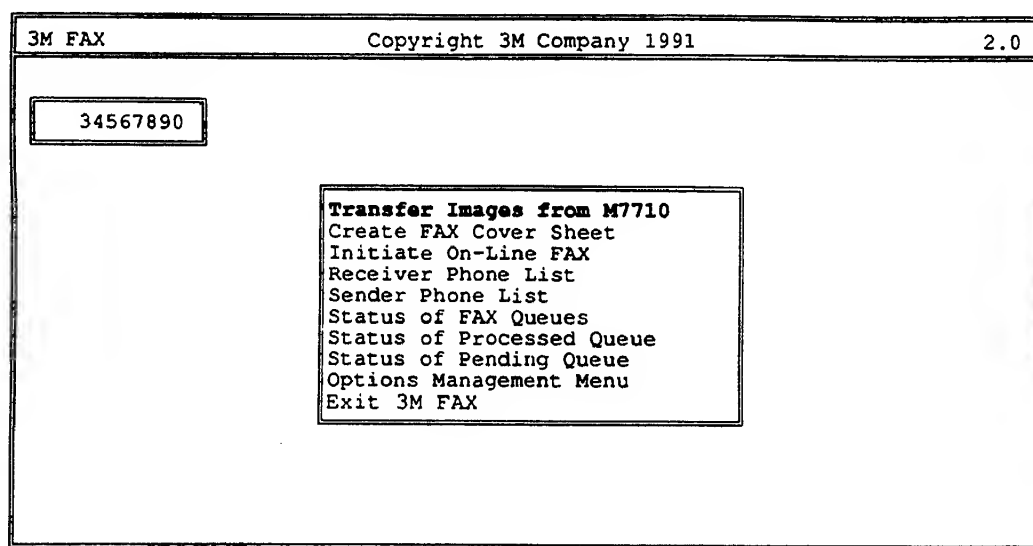
Selecting Options from the Main Menu

The 7960 Controller is menu driven by a MMMFAX Program. The program is started by applying power to the Controller. After about 45 seconds the Main Menu with 10 options (see screen below) is displayed. After the number of free bytes on the PC hard disk is displayed, the "Transfer Images from M7710" option becomes "active" (highlighted in reverse video).

- To select the active (highlighted) option press **Enter**.
- To select a different option, use the **↑**, **↓**, **Home**, or **End** Keys to highlight the desired option. Then press **Enter**.

The Main Menu is circular, that is, pressing **↑** when the highlight is at the top of the list moves the highlight to the last option. Pressing **↓** when the highlight is at the bottom of the list moves the highlight to the first option.

Use the following Keys in the Main Menu:	
↑ highlights the option above. ↓ highlights the option below.	End -highlights the last option. Home -highlights the first option.

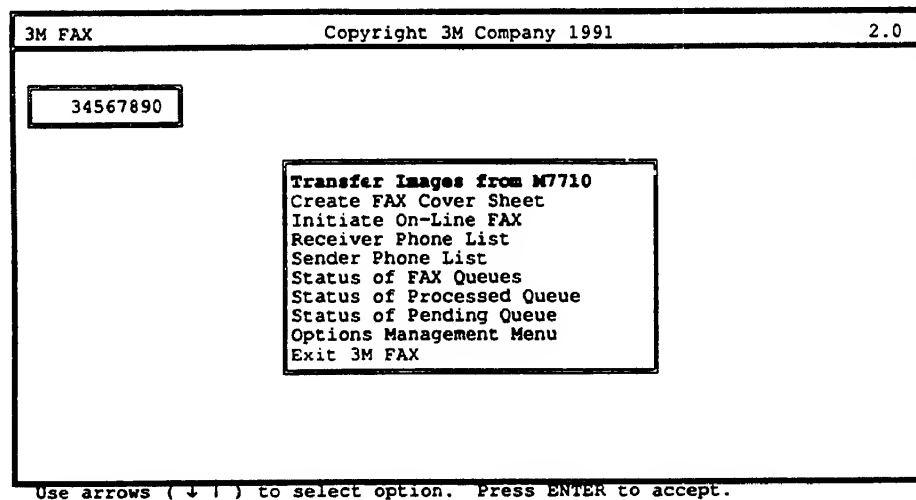


Use arrows (**↓** **↑**) to select option. Press **ENTER** to accept.

Option	Reference
Transfer Images from M7710	Tabbed section "OPERATING SEQUENCE", page OS-7; and page FC-4.
Create FAX Cover Sheet	Tabbed section "OPERATING SEQUENCE", page OS-8; and page FC-7.
Initiate On-Line FAX	Tabbed section "PAGE SEARCHER", page PS-9; page FC-15.
Receiver Phone List	Page FC-16.
Sender Phone List	Page FC-16.
Status of FAX Queues	Page FC-18.
Status of Processed Queue	Page FC-19.
Status of Pending Queue	Page FC-21.
Options Management Menu	Page FC-23.
Exit 3M FAX	Tabbed section "OPERATING SEQUENCE", page OS-11.

Transferring Images from the 7710 to the 7960 Controller

The 7960 Controller receives the digitized image data from the 7710 for printing or FAXing. Image transfer is identical in either manual or on-line systems.



- To move images from the 7710 to the 7960 Controller for printing or FAXing, select "Transfer Images from M7710" on the Main Menu.

Before the transfer is started, however, the amount of disk space available for storing images is checked. If an error message appears, see tabbed section Display Codes and Troubleshooting, Display Messages--7960 Controller, page DT-13. If there is sufficient memory, the transfer is started and the Main Menu is replaced by a "split" transfer screen (see screen on next page). The upper screen is used for FAXing, and the lower screen is used for printing.

- To transfer an image for FAXing, press **SCAN** on the 7710 Keyboard.
- To transfer an image for printing, press **PRINT** on the 7710 Keyboard.

If you wish, you can scan images for FAXing as the printer is printing stored images. Images are transferred to the 7960 faster than the 7941 Laser Printer can print them, but the 7960 holds them in queue for printing as the scanning is occurring. The printer must finish its tasks, however, before the transfer image process is completed and the FAX Cover Sheet Menu is displayed.

Note

If the Reader-Scanner Projection Lamp goes out and the Scanner Display reads "Standby", press the **ENTER** Key on the Reader-Scanner Keyboard.

Transferring Images from the 7710 to the 7960 Controller (continued)

Use the following Controller Keys with the transfer image screen:

Esc returns the screen to the Main Menu.

F1 deletes the images that have been transferred so far. A confirmation is needed before the image is deleted. The screen is erased and the transfer program returns to the beginning of the program.

F5 erases from memory the last image transferred from the 7710. A confirmation is needed before the image is deleted. The screen displays a message that the image is deleted and waiting for the next image. The screen below shows scan image 2 deleted as an example.

F8 prints the last image that was scanned allowing a check of quality or masking. The image can then be retained in the batch or deleted.

3M FAX	Copyright 3M Company 1991	2.0
Waiting for scan image 1 Reading scan image 1 Clearing scan image 1 Waiting for scan image 2 Reading scan image 2 Clearing scan image 2 Waiting for scan image 3 Scan image 2 deleted Waiting for scan image 2		
F1=Dump images F5=Delete last image F8=Print last image ESC=Exit transfer		
Waiting for print image 1		

Note

The above mentioned Controller Keys, except for <ESC> refer only to the top (SCAN) window. Use of these keys does not affect the print image.

FAXing a Document Package

Variations in the FAXing Process

After image transfer from the 7710 to the 7960 Controller, the procedures for creating a Cover Sheet and FAXing the document package vary depending on whether or not your 7710 system is "on-line" with a host computer.

Manual and On-line Systems

- For "manual" systems, that is, 7710 systems not linked to a host computer, the operator controls creation of the Cover Sheet and submission of the FAX from the Controller Keyboard. See "FAXing with Manual Systems--Creating the Cover Sheet, page FC-7.
- For "on-line" systems, the process of locating images on microfilm, scanning and transferring them to the Controller, creating the Cover Sheet, and FAXing the document package is automatic. The process is controlled by command strings downloaded to the 7710 from the host computer. See "FAXing with On-Line Systems", page FC-15, for a description of the process.

Sending a Document Package to Multiple Locations

Normally the document package is sent out to the single receiver identified on the Cover Sheet (see FAXing with Manual Systems--Creating the Cover Sheet, page FC-7). However, if you wish to FAX the same document package to several remote locations, the system has the capability of "broadcasting" to these locations (see Broadcast Cover Sheet, page FC-12). In addition, it has the capability of FAXing to any one of several FAX machines at the same location. This function, called "aliasing," directs the document package to the least busy phone number at the location. For aliasing to be in effect, it must be selected in the MMMFAX Configuration File (see page FC-26).

The MMMFAX Configuration File

The FAX Controller software includes a program that allows you to customize the system to your application by changing various control parameters. These parameters are summarized on page FC-26.

FAXing a Document Package (continued)

FAXing with Manual Systems--Creating the Cover Sheet

General Concepts

For 7710 systems that are not on-line with a host computer, the operator "manually" creates the Cover Sheet for the document package at the Controller Keyboard. The "Create FAX Cover Sheet" option is automatically selected on the Main Menu after successful transfer of an image package from the 7710 to the Controller. You can also select "Create FAX Cover Sheet" from the Main Menu using the cursor movement Keys. Simply press **Enter** on the Controller Keyboard to display the Cover Sheet Menu (see illustration on next page). Several Cover Sheet functions can be customized via the MMMFAX Configuration File (see page FC-26). For example:

- You can specify whether the Cover Sheet is the first or last page transmitted in the FAX package.
- You can specify whether the initial position of the Cursor is on the first line of the Receiver Field or the Subject Field.
- You can retain data from the last Cover Sheet created to use as a basis for creating the current Cover Sheet by editing.

The Cover Sheet is created by filling in blank fields or by either using or editing the information already contained in the fields or stored in files. For example, you can fill in the Receiver (To) and Sender (From) fields or transfer data derived from a Receiver/Sender list that you created earlier. The Cover Sheet fields are numbered (1 through 13) in the illustration below, in the order that the cursor normally follows as the fields are created. The primary fields are identified as follows:

- **To Field:** Receiver's name, address, FAX number and phone number. See Receiver and Sender Fields, page FC-10.
- **From Field:** Sender's name, address, FAX number and phone number. See Receiver and Sender Fields, page FC-10.
- **Subject Field:** Word or brief phrase pertaining to the material of the document package. See Subject Field, page FC-10.
- **Delayed Delivery Field:** Time and date you wish the document package to be FAXed (other than the present time). See Delayed Delivery Field, page FC-10.

3M FAX		Copyright 3M Company 1991		2.0	
To :	1	FAX # :	4		
	2	Phone # :	5		
	3				
From :	6	FAX # :	9		
	7	Phone # :	10		
	8				
Subject :	11				
Delayed Delivery Time : 12 Date : 13					
Enter first name of recipient					
F1=Phone List F2=Clear Field F4=Broadcast F8=Send F9=Add'l Subj					
ESC=Quit HOME,END					

FAXing a Document Package (continued)

Complete the Cover Sheet Menu using the typewriter Keys and the following special Keys:	
<p>↑ moves cursor back one field.</p> <p>↓ moves cursor ahead one field.</p> <p>→ moves cursor one character to the right.</p> <p>← moves cursor one character to the left.</p> <p>Backspace deletes the last character to the left from the end of the field.</p> <p>End moves the cursor to the beginning of the Subject Field.</p> <p>Esc returns the screen to the Main Menu.</p> <p>F1 displays the Receiver or Sender Phone List depending on which field the cursor was in. If the cursor was in the Subject, Time, or Date Field, the Message "No help for this field" will display. From the phone list, select the receiver/sender and press F9. The Cover Sheet will automatically be filled in.</p> <p>F2 clears the field the cursor is in.</p>	<p>F4 displays a Broadcast Mode Cover Sheet Menu for sending a document package to more than one remote location. See page FC-12.</p> <p>F8 FAXes the documents and returns the screen to the Main Menu.</p> <p>F9 displays a non-formatted Subject Field. See page 10. Allows additional lines of text on the Cover Sheet. The Backspace Key is the only editing Key available. Press F10 to save input or Esc to abort. From the phone list, F9 transfers the highlighted record to the Cover Sheet.</p> <p>Enter advances cursor one field.</p> <p>Home returns the cursor to the Receiver First Name Field. (You can program the cursor to return to the Subject Field. See page FC-26.)</p> <p>Shift-Tab moves the cursor back one labeled field</p> <p>Tab advances cursor one labeled field.</p>

FAXing a Document Package (continued)

Cover Sheet Format

The Cover Sheet for FAXed document packages appears at the destination as shown below. You can change the Cover Sheet format (see Changing the MMFAX Configuration File, page FC-26) within the following limits:

Each line of "To" and "From" - 30 characters
 FAX # Receiver/Sender - 20 characters
 Phone # Receiver/Sender - 20 characters
 Subject of Transmission - 60 characters
 Delayed Time of Transmission - 8 characters
 Delayed Date of Transmission - 8 characters
 Additional Subject Paragraph - 1,310 characters

Note

If you exceed a field length while you are typing, a buzzer will sound.

Customer Sender Identification	3M Company		
Receiver	To : Joseph P. Smith Any Business, USA Bldg 1-05	FAX # : (612)555-1234 Phone # : 555-1121	
Sender	From : John Doe 3M Company 3M Center	FAX # : (612)555-0000 Phone # : (612)555-0001	
Subject	Subject : Cover sheet format		
Delayed Delivery	Delayed Delivery Time: 12:00:00 Date : 01/01/90		
Page Count	Document has 3 pages including a cover sheet		
Additional Paragraph	This is the area where the additional subject paragraph goes.		

FAXing a Document Package (continued)

Receiver and Sender Fields

Normally when the Cover Sheet is first displayed, the cursor is on the first line of the "To" Field. A message on the instruction line of the screen prompts you to enter information. The first 20 characters in the first line are used to identify the document in the 7710 FAX queues and also for alphabetizing and sorting records in the Receiver and Sender lists.

1. To use Receiver and Sender Lists to fill in the "To" and "From" Fields, see Creating and Editing FAX Receiver and Sender Phone Lists, page FC-16.
2. Observe the following rules when typing a phone number in the FAX # Field:

- Valid characters are: 0 1 2 3 4 5 6 7 8 9 - () , ; # *
- Maximum number of characters is 20.
- You may use a hyphen or parentheses (but not a space) to separate parts of the telephone number if desired. Example: (012)345-6789 or 0123456789
- Use a comma to insert a 1-1/2 second pause. Example: 0,,123-4567 (3 second pause)
- Use a semicolon to wait for a second dial tone (up to 15 seconds). Example: 0;123-4567
- Use a pound sign to notify the international operator that all numbers have been entered. Example: #(012)345-6789
- Use an asterisk to access long distance if needed. Example: *(012)345-6789
- The simplest way to edit the FAX # Field is to type over the old number, or use F2 to erase the old number.
- If 9 must be dialed to get an outside line, a 9 must be included in the FAX number. A comma is recommended for a 1-1/2 second pause. Example: 9,123-4567

Subject Field

- Key in a word or phrase, up to 20 characters maximum, to describe the contents of the document package.

The "subject" will also be used as the Customer Sender Identification (CSID) Field at the top left of the Cover Sheet, unless you use the Configuration File to specify another phrase (such as your company name). See Changing the MMMFAX Configuration File on page FC-26. If the Configuration File controls the CSID, the same phrase will be repeated on the Cover Sheet of each document.

Note

You can use the Configuration File also to specify the Subject Field, rather than the Receiver Field, as the initial position of the cursor each time the Cover Sheet Screen is displayed.

Delayed Delivery Field

Use this field if you wish to delay delivery of the current document package:

- If you wish to delay FAXing until later in the day, type in the desired hour, minutes, and seconds. For example: 16:30:00 for 4:30 PM. (The ":" is entered automatically.) Note that the entry must be in "military" time (hours 00:00 through 23:59).
- If you wish to delay delivering the document package until tomorrow or later, type in the desired month, day and year in order. For example: 09/02/91 for September 2, 1991. (The "/" is entered automatically.)

FAXing a Document Package (continued)

Additional Subject Paragraph

Pressing the **F9** Key from the Cover Sheet Menu or Broadcast Cover Sheet Menu displays the Additional Subject Paragraph Screen. This screen allows you to type in additional information such as greetings, notes, or instructions of up to 17 lines of 80 characters each. This information is added to the bottom of the FAXed Cover Sheet exactly as it appears on the screen. When an additional subject paragraph has been entered, it is indicated on the menu on the line following the delayed delivery time and date, but is not displayed.

When the end of a line is reached, a "beep" occurs and a message is displayed indicating no more input is allowed. Press **Enter** to advance to the next line and resume typing. The **Backspace** Key is the only editing feature available. Careful planning and editing as you type will help to produce an error free message. To abort a message and start over, press **Esc** and **F9** again for a fresh screen.

Use the typewriter keys and the following special keys when in the Additional Subject Paragraph Menu:

Backspace deletes the last key entry moving back over a carriage return to the previous line when necessary.

Esc returns the screen to the Cover Sheet Menu or Broadcast Cover Sheet Menu and the information just typed is deleted. No additional information is added to the Cover Sheet.

F10 accepts the additional paragraph as it is typed and when the Cover Sheet is FAXed, the Additional Subject Paragraph is appended. The screen is returned to the Cover Sheet Menu or Broadcast Cover Sheet Menu.

Subject Paragraph	Copyright 3M Company 1991	2.0
Enter paragraph including carriage returns F10=Save input ESC=Quit		

FAXing a Document Package (continued)

Broadcast Cover Sheet

The first step in the broadcast FAX process is to determine what additional locations you wish to send a document package. The Broadcast Cover Sheet Menu is accessed only by pressing **F4** from the Cover Sheet Menu. The cursor is automatically placed in the first sub-field of the "From" Field. Information can be entered in the Sender Fields, Subject Field, Delayed Delivery Field, and Additional Subject Paragraph in the same manner described for the Cover Sheet, pages FC-7 through FC-11. Recipients of the broadcast are selected by tagging records in the Receiver Phone List. See page FC-14.

Complete the Cover Sheet Menu using the typewriter keys and the following special keys:	
<p>↑ moves cursor back one field.</p> <p>↓ moves cursor ahead one field.</p> <p>→ moves cursor one character to the right.</p> <p>← moves cursor one character to the left.</p> <p>Backspace deletes the last character to the left from the end of the field.</p> <p>End moves the cursor to the beginning of the Subject Field.</p> <p>Esc returns the screen to the Main Menu.</p> <p>F1 displays the Receiver or Sender List depending on which field the cursor is in. If the cursor was in the Subject, Time, or Date Field, the Message "No help for this field" will display. From the phone list, select the receiver/sender and press F9. The Cover Sheet will automatically be filled in.</p> <p>F2 clears the field the cursor is in.</p>	<p>F4 displays a Broadcast Mode Cover Sheet Menu for sending a document package to more than one remote location.</p> <p>F8 FAXes the documents and returns the screen to the Main Menu.</p> <p>F9 displays a non-formatted Subject Field. See page FC-11. Allows additional lines of text on the Cover Sheet. See page FC-9. The Backspace Key is the only editing key available. Press F10 to save input or Esc to abort. From the phone list, F9 transfers the highlighted record to the Cover Sheet.</p> <p>Enter advances cursor one field.</p> <p>Home returns the cursor to the Receiver Field. (You can program the cursor to return to the Subject Field. See page FC-26.)</p> <p>Shift-Tab moves the cursor back one labeled field</p> <p>Tab advances cursor one labeled field.</p>

FAXing a Document Package (continued)

3M FAX		Copyright 3M Company 1991		2.0	
Broadcast mode : 0 destinations are selected					
Hit F4 to display list of possible broadcast destinations					
From	:	_____	FAX #	:	_____
		_____	Phone #	:	_____

Subject	:	_____			
Delayed Delivery Time	:	_____	Date	:	_____
Enter first name of recipient					
F1=Phone List F2=Clear Field F4=Broadcast F8=Send F9=Add'l Subj ESC=Quit HOME,END					

The Sender Field can be automatically completed by first placing the Cursor anywhere in the Sender Field, pressing F1 to display the Sender Phone List, highlighting the desired sender record, and pressing F9 to return to the Broadcast Cover Sheet Menu.

Pressing F2 clears the Sender Field to allow you to complete the Sender Field for one-time transmission.

Pressing F4 from the Broadcast Cover Sheet Menu displays the Receiver Phone List Screen to allow easy selection of the broadcast destinations. The desired recipients of the broadcast are highlighted and "tagged". See the following page for tagging records. The number of destinations selected is shown near the top of the menu.

Similar to the Cover Sheet Menu, you can add additional information to the bottom of the Broadcast Cover Sheet. Refer to page FC-11 for instructions on completing the Additional Subject Paragraph. Pressing F10 saves the additional information and includes it with each Cover Sheet. Pressing Esc does not save any information entered and returns you to the Broadcast Cover Sheet Menu.

Pressing F8 initiates the broadcast. For each destination selected, a Cover Sheet is generated, the image files are copied, and a queue record for each location is built and sent to the Pending Queue. A message displays to indicate which broadcast document is in progress, "Please wait.....broadcasting to destination x" where x is a number indicating the destination.

FAXing a Document Package (continued)

Tagging Records from the Receiver Phone List for Broadcast

"Tagging" a record from the Receiver Phone List is an efficient method of completing a distribution list for broadcasting a document package to several remote locations. You first highlight a record and tag it by pressing F1. The tagged record is indicated by a ">" in the left margin of the screen. When you have tagged all the records you wish to send the document package, press Esc to return to the Broadcast Cover Sheet Menu. The top line of the Broadcast Cover Sheet Menu indicates the number of tagged records for this document package. If you decide not to include a tagged record for broadcast, you simply highlight the record and press F2 to remove the tag. If a record is added in the broadcast mode, it is automatically tagged.

Use the typewriter keys and the following special keys when in the Receiver List for Broadcast:	
↑ highlights the previous receiver.	F5 enters records to the Receiver Phone Lists. The maximum number of entries is 1000.
↓ highlights the next receiver.	F6 moves the cursor to the first line of the Receiver Field for editing.
End highlights the last receiver of the last screen.	F7 deletes an entry in the Receiver Phone List--requires confirmation.
Esc returns the screen to the Broadcast Cover Sheet Menu.	F8 displays the entire record of the Receiver Phone List for review.
F1 selects the current record as a destination for broadcasting. The record is tagged with a ">" in the left margin next to the record.	Home highlights the first receiver of the first screen.
F2 removes the highlighted tag set earlier.	Page Down highlights the first receiver of the next screen.
F4 Search Phone List for entry. Searches a string of up to 30 characters and highlights the closest alphabetical match.	Page Up highlights the first receiver of the previous screen.

Receiver List		Copyright 3M Company 1991	2.0
To :	FAX # :		
	Phone # :		
>Harold D. Jones	(612) 555-5678	555-5565	
Joseph P. Smith	(612) 555-1234	555-1121	
>Thomas F. White	(612) 555-9012	555-9989	
*****END OF LIST*****			
Use F1 to select broadcast destinations			
F1=Tag F2=Untag F4=Search F5=Add F6=Change F7=Delete F8=Show all ESC=Exit PGUP, PGDN, HOME, END			

FAXing a Document Package (continued)**FAXing with On-Line Systems**

With on-line systems creation of the Cover Sheet and submission of the FAX is automatic. On-line systems require:

- A 210 CAT (Cartridge ANSI Transport).
- A 7756 Page Search equipped with an Asynchronous Protocol Interface (API) Communications Kit.
- A host computer connected to the system.
- The host computer must be equipped with microfilm index and retrieval software such as Document Management System (DMS) or WorkManager.
- The 7710 must be in the Scanner Mode. See tabbed section PAGE SEARCH, pages PS-5 and PS-8.
- The system must be set to "Phone List Translation" or "Embedded FAX translation" via the MMMFAX Configuration File. See Changing the MMM Configuration File, page FC-26.
- That information not be retained from the previous cover sheet. See page FC-30, Step 18.

Initiate On-Line FAX

1. From the 7710 Page Search Keyboard, press **MOD** and ensure the 7756 is set to the desired mode. See tabbed section "PAGE SEARCH", page PS-2 to change the mode.
2. Request a download from the Host Computer if performing a download in 3M Enhanced Download Mode. Or, key in **CLR 8888 L 02 L** if in 3M Download Mode or **CLR 8888 L 04 L** if in CAR Mode.
3. When the download is complete, press **CLR**.
4. From the 7960 Controller, highlight "Initiate On-Line FAX" (or "Transfer Images from 7710" if not DMS or WorkManager) and press Enter.
5. Press **MOD STP** to search and view, or **MOD AUTO** to search and FAX. (The Reader-Scanner must be in Scanner Mode for FAXing. See tabbed section "PAGE SEARCH", pages PS- 5 and PS-8).

Temporarily Interrupting Step, or Auto-Scanning,

1. If you wish to temporarily stop the process for a task such as enhancing an image or making a test print:
 - Press the **CLR** Key on the 7710 Page Search Keyboard.
 - Perform the desired task (for example, image enhancement).
 - Press the **B** Key and then the **AUTO** Key to resume the automatic mode.
2. If an error occurs while the Page Search unit is "auto-scanning," press the Controller Keyboard **F1** Key to dump the images. Clear the error on the 7710 and restart the function. The system will re-scan and FAX the entire batch of images.
4. The document package will terminate automatically with the next cover sheet label information, the Cover Sheet will be created and the package FAXed. You can, however, terminate the package by pressing **FXEND** on the 7710 Keyboard or **Esc** on the Controller Keyboard if this is the last document package.

Note

Normally the document package is FAXed first and the Cover Sheet last. If you wish this order to be reversed, modify the MMMFAX Configuration File as instructed on page FC-26.

Creating and Editing FAX Receiver and Sender Phone Lists

The FAX Receiver and Sender Phone Lists allow you to store frequently used receiver and sender records. You can store up to 1000 records for both receiver and sender. Entries in the Receiver and Sender Phone Lists are displayed in alphabetical order by the first line of the "To" Field or "From" Field respectively. The procedure for setting up either phone list is the same. From the Main Menu, highlight "Receiver Phone List" or "Sender Phone List", using the ↑ and ↓ keys if necessary, and press Enter to display the Receiver or Sender Phone List Menu respectively. Or, from the Cover Sheet Menu, position the Cursor anywhere in the "To" (Receiver) Field or the "From" (Sender) Field, and press F1 to display the Receiver or Sender Phone List Menu respectively:

Receiver List		Copyright 3M Company 1991	2.0
To :	_____ FAX # :		_____
	_____ Phone # :		_____

Harold D. Jones	(612) 555-5678	555-5565	
Joseph P. Smith	(612) 555-1234	555-1121	
Thomas F. White	(612) 555-9012	555-9989	
*****END OF LIST*****			

F4=Search F5=Add F6=Change F7=Delete F8=Show all
ESC=Exit PGUP, PGDN, HOME, END

When typing a telephone number in the FAX # Field, observe the following:

- Valid characters are: 0 1 2 3 4 5 6 7 8 9 - () , ; # *
- Maximum number of characters is 20.
- You may use a hyphen or parentheses (but not a space) to separate parts of the telephone number if desired. Example: (012)345-6789 or 0123456789
- Use a comma to insert a 1-1/2 second pause. Example: 0,,123-4567 (3 second pause)
- Use a semicolon to wait for a second dial tone. Example: 0;123-4567
- Use a pound sign to notify the international operator that all numbers have been entered. Example: #(012)345-6789
- Use an asterisk to access long distance if needed. Example: *(012)345-6789
- Observe the telephone number rules, page 3, in the FAX # Field.
- If a prefix number is needed to get an outside line, the number must be included in the FAX number. A comma is recommended for a 1-1/2 second pause. Example: 9,123-4567

Creating and Editing FAX Receiver and Sender Phone Lists (continued)

Use the typewriter keys and the following special keys in the Receiver and Sender List Menus:	
↑ highlights the previous receiver/sender.	F7 deletes an entry in the Receiver/Sender List. Requires confirmation.
↓ highlights the next receiver/sender.	F8 displays the entire record of the Receiver/Sender List for review.
End highlights the last receiver/sender of the last screen.	F9 selects record for Cover Sheet or Broadcast Cover Sheet (F9 is valid only when the phone list is entered from either Cover Sheet Menu).
Esc returns the screen to the Main Menu, Cover Sheet Menu, or Broadcast Cover Sheet Menu.	Home highlights the first receiver/sender of the first screen.
F4 initiates a search in the Phone List for a record. Searches a string of up to 30 characters and highlights the closest alphabetical match.	Page Down highlights the first receiver/sender of the next screen.
F5 enters records to the Receiver/Sender Lists. The maximum number of entries is 1000.	Page Up highlights the first receiver/sender of the previous screen.
F6 moves the cursor to the first line of the "To"/"From" Field for editing.	

You can search for a record by pressing the **F4** Key, typing in a string of up to 30 characters, and pressing **Enter** to initiate the search. If the record is found, it will appear highlighted on the screen. If it is not found, the screen will be positioned near where it would appear if it were on the list.

You can add a record by pressing the **F5** Key or change a record by first highlighting the record you wish changed then pressing the **F6** Key. New function keys are made active and the screen prompts you to "Enter Recipient information". You must include a FAX number in the entry before leaving the receiver functions. Press **F2** if you wish to clear the record displayed in the "To" Field and retype the record. If you wish to return to the Receiver/Sender List Menu without adding or changing a record, simply press **Esc**. If the new record is to be added to the list, press **F10**. As records are added to the phone lists, they are inserted in alphabetical order and highlighted as the active entry.

To delete a record from the Receiver/Sender List, highlight the record you wish to delete and press **F7**. The Controller will ask "Are you sure? (Y/N):". Pressing **Y** deletes the highlighted record and highlights the previous record. Pressing **N** returns the display to the previous screen. The selected receiver/sender is deleted and the previous receiver/sender is now highlighted.

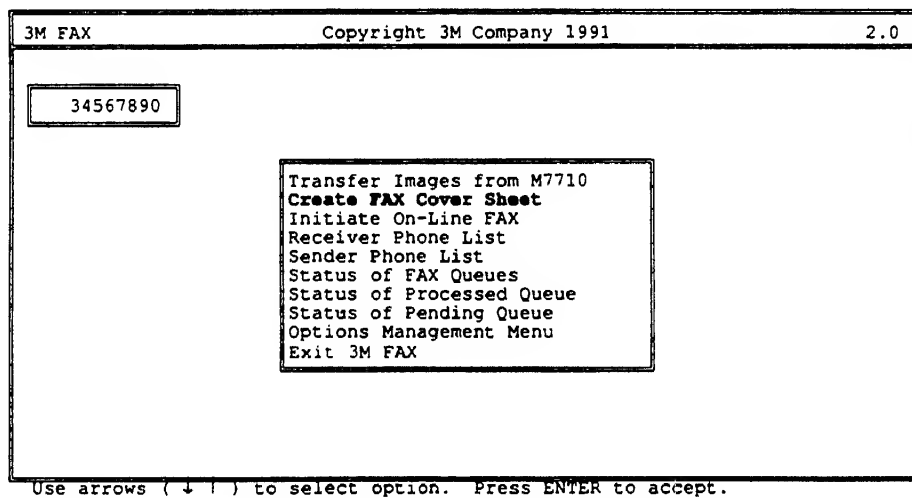
To review an entire record, highlight the record and press **F8**.

To return to the previous menu without transferring a record, press **Esc**. To choose a record for inclusion in the Main Menu, Cover Sheet Menu, or Broadcast Cover Sheet Menu, press **F9**. If an addition or deletion was made the Controller Display will prompt you "Do you wish to backup the phone list? (Y/N):". Pressing **N** returns the display to the previous menu. Pressing **Y** prompts the Controller to display "Insert backup diskette in Drive A. Press **Enter** when ready". Insert a backup diskette in Drive A and press **Enter**. The file will be backed up on diskette and the display will return to the previous menu. The backup process takes about 15 seconds. If a diskette needs to be formatted, see Formatting a Backup Phone List File Diskette, page FC-31.

Status of FAX Queues

This display offers a quick method of tracking the status of a FAXed document package. As packages are submitted from the Cover Sheet Menus, they are sent to a pending file where they wait for processing. When the processing is complete, the file is moved to a processed file.

From the Main Menu, highlight "Status of FAX Queues" and press Enter. The Status Line displays the message: "PENDING: X PROCESSED Y". This simply lets you know at a glance how many FAXes are ready to be transmitted and how many have been received by their destination.



Note

- If more information is needed regarding pending FAX queues, see "Status of Pending Queue", page FC-21.
- If more information is needed regarding the processed FAX queue, see "Status of Processed Queue", page FC-19.
- The screens for Status of Pending Queue and Status of Processed Queue are static. To check if the status of either queue has changed while either screen is displayed, press Enter again.

Status of Processed Queue

The "Status of Processed Queue" option should be selected when a more detailed status of processed FAXed document packages is desired. Each log entry shows the time and date the FAX was sent, the first 20 characters of the first line of the "To" Field from the Cover Sheet, the number of pages transmitted, the time it took to complete the transmission, the status of the FAX operation, and the FAX Interface Board to which the job was submitted. When the screen is first displayed the first log entry is highlighted. From the Main Menu, highlight "Status of Processed Queues" and press Enter (if the FAX Queue is empty, the Controller displays the message "FAX Queue empty--no status"):

Processed List		Copyright 3M Company 1991		2.0	
TIME/DATE SENT	FAX DESTINATION	PAGES	TRANSMIT TIME	STATUS	B
16:01:06 01/01/90	Joseph P Smith	3	00:30 MM:SS	3212	1
16:01:00 01/02/90	Harold D. Jones	3	00:20 MM:SS	good	1
16:01	<div><div>3212 A disconnect command was received from the remote fax machine</div><div>Hit ENTER to continue</div></div>				
F1=Status F2=Purge Good F3=Delete F4=Purge All F5=Resend F6=Print F7=Resend All Bad ESC=Exit PGUP, PGDN, HOME, END					

Processed Queue Column "STATUS"

- "good" means the FAXed document package was successfully sent and received.
- "3212", or another number, means an error occurred while trying to send the FAXed document package. Press F1 to display a "window" on the screen with a message containing a description of the error that occurred. Follow the instructions on the display to clear the error. Press Enter to clear the message on the display. See tabbed section "DISPLAY CODES/TROUBLESHOOTING", pages DT-13 through DT-22, for a listing of all error codes and messages.

Processed Queue Column "B"

- "1", or another number, indicates which FAX board was used to transmit (the system can have up to 3).

Status of Processed Queue (continued)

Use the following Keys in the Processed List Menu:	
↑ highlights the previous record. A bell will sound when the first record is highlighted.	F4 purges <u>all</u> records from the log.
↓ highlights the next record. A bell will sound when the last record is highlighted.	F5 resends the highlighted record.
End highlights the last record of the last screen.	F6 prints the highlighted record onto the local laser printer.
Esc returns the screen to the Main Menu.	F7 resends all of the entries in the log having a bad status.
F1 displays a "window" with a message describing the error that occurred.	Home highlights the first record of the first screen.
F2 purges all records which have a "good" status from the log.	Page Down highlights the first record of the next screen.
F3 deletes the highlighted log entry.	Page Up highlights the first record of the previous screen.

When the status in the log entry is not good, press F1 to display a "window" on the screen with a message containing a description of the error that occurred. Press Enter to return the screen to the previous menu.

Pressing F2 purges all records which have a "good" status from the log. The message "This will delete records with good status. Are you sure? (Y/N)" will display. Pressing Y, the Controller will ask again "Are you 100% sure? (Y/N)". Pressing Y again will purge the records--there is no way to retrieve them! The message "Purging x entries from Processed List: entry y." As each entry is purged it is transferred to the status log file. When the operation is done, the Main Menu is displayed if the list is now empty. Pressing N to either question returns the display to the Status of FAX Queues Menu.

Pressing F3 deletes just the highlighted record. Each record in the sent list has associated with it a document list file, a cover sheet file, and up to 99 image files. Eventually there will be no more room on the hard disk for image transfers. Before a record is deleted, a double confirmation is required similar to purge all records having a "good status".

Pressing F4 purges all records from the log. Before all records are purged, a double confirmation is required similar to purge all records having a "good status". When this operation is done, control is returned to the Main Menu.

Pressing F5 resends the highlighted record. Most often this function is used to submit a record having a bad status indicating that the FAX operation was unsuccessful. Before the document package is resent, the Cover Sheet is displayed to allow for modifications. Pressing F8 from the Cover Sheet Menu replaces the old information and returns the display to the Status of Pending Queue Menu. Pressing Esc from the Cover Sheet Menu returns the display to the Status of Processed Queue Menu.

Pressing F6 prints the highlighted record onto the local laser printer. A message is displayed on the status line indicating which page is currently printing.

Pressing F7 resends all of the entries in the log having a bad status. No changes to the Cover Sheet are allowed but the record is transferred to the Pending Queue where it can be modified. The Controller will ask "Are you sure? (Y/N):" Pressing Y will resend the highlighted record and return the display to the Main Menu. Pressing N will return the display to the Processed Queue Menu.

Status of Pending Queue

The "Status of Pending Queue" option should be selected when a more detailed status of pending FAXed document packages is desired. Each log entry shows the time and date that the FAX is to be sent, the last name of the FAX recipient, the FAX number, the number of retries remaining, the number of pages in the document, and the FAX Interface Board to which the job was submitted. When the screen is displayed, the first log entry is highlighted. From the Main Menu, highlight "Status of Pending Queue" and press Enter:

Pending List		Copyright 3M Company 1991		2.0	
TIME/DATE TO SEND	FAX DESTINATION	FAX NUMBER	RETRY	PGS	B
16:01:06 01/01/90	Joseph P Smith	(612)555-1234	5	3	1
16:01:00 01/02/90	Harold D. Jones	(612)555-5678	5	2	1
16:01:01 01/03/90	Thomas F. White	(612)555-9012	5	5	1
*****END OF LIST*****					

F2=Purge All F3=Delete F5=Mod Cover ESC=Exit PGUP PGDN HOME END

F2=Purge All F3=Delete F5=Mod Cover ESC=Exit PGUP,PGDN,HOME,END

Pending Queue Column "RETRY"

"5" is the number of retries remaining (5 is the default number of retries, default time between retries is 5 minutes). The number of retries and time between retries can be easily changed. See Changing the MMMFAX Configuration File, page FC-26.

Pending Queue Column "PGS"

"3", "2", and "5" are the number of pages to be FAXed in a Document Package including the Cover Sheet.

Pending Queue Column "B"

"1" indicates which FAX Interface Board was used to transmit the document package (the system can have up to 3).

Status of Pending Queue (continued)

Use the following keys in the Processed List Menu:	
↑ highlights the previous record	F3 deletes the highlighted record from the log.
↓ highlights the next record	F5 allows changes to the Cover Sheet.
End highlights the last record of the last screen.	Home highlights the first record of the first screen.
Esc returns the screen to the Main Menu.	Page Down highlights the first record of the next screen.
F2 purges all records from the log.	Page Up highlights the first record of the previous screen.
F3 deletes the highlighted record from the log.	

Note

You cannot delete document packages while in the process of FAXing.

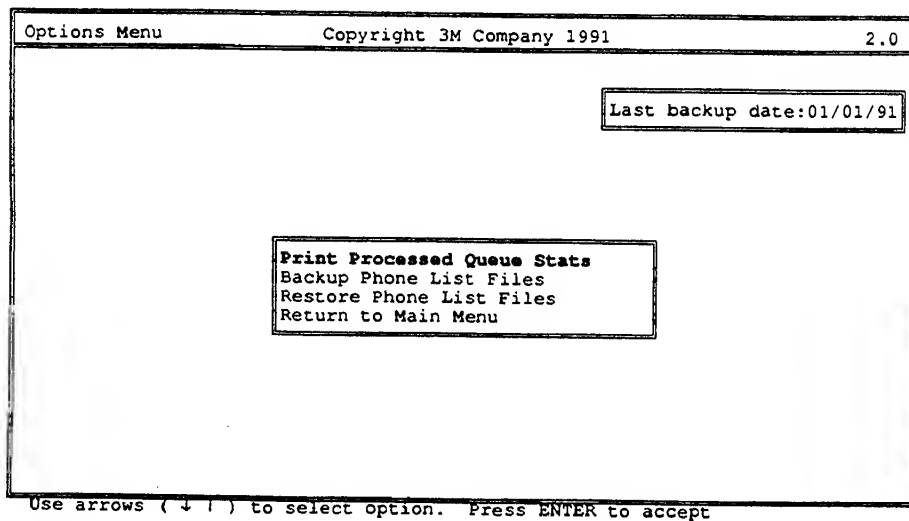
To purge the Pending Log of all records, press the **F2** Key. The message "This will delete all records. Are you sure? (Y/N)" will display. Pressing **Y**, the Controller will ask again "Are you 100% sure? (Y/N)". Pressing **Y** again will purge the records--there is no way to retrieve them! The message "Purging x entries from Pending List: entry y." As each entry is purged it is transferred to the status log file. When the operation is done, the Main Menu is displayed. Pressing **N** to either question will return the display to the Status of Pending Queues Menu. Document packages cannot be deleted while in the process of being FAXed.

To delete a highlighted record from the pending log, press **F3**. You will be prompted for confirmation similar to purging the pending log of all records. When all entries in the Pending Queue are deleted the Main Menu will display.

If you wish to modify the Cover Sheet of a pending document package, press **F5**. The Cover Sheet is displayed and can be edited as described in FAXing with Manual Systems--Creating the Cover Sheet, page FC-7. Having modified the Cover Sheet, press **F8**. The Document package will be resubmitted to the pending list and the Status of Pending Queues Menu will again be displayed. If, while in the Cover Sheet Menu, you press the **Esc** Key, no changes will be saved, but the date on the document will be changed back. The Cover Sheet of document packages in the process of being FAXed cannot be modified.

Options Management Menu

The Options Management Menu currently offers four options: Print Processed Queue Stats, Backup Phone List Files, Restore Phone List Files, and Return to Main Menu. This menu also contains a small "window" displaying the date of the last backup operation. If a backup has never been done, the date will display as 00/00/00. From the Main Menu, highlight the option of choice by using the ↑ and ↓ Keys and press **Enter**.



Printing the Processed Queue Stats

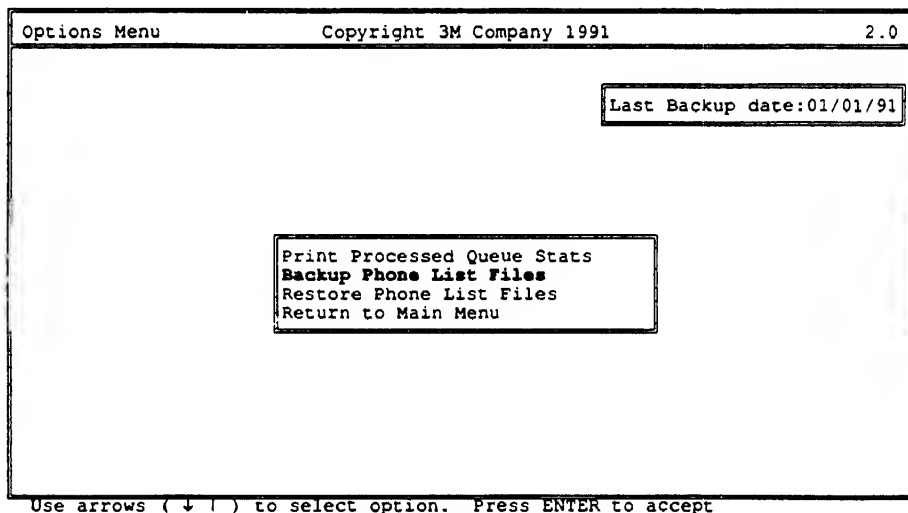
The Print Processed Queue Stats option is selected from the Options Management Menu to print the contents of the status log file. Each time an entry is deleted from the processed queue, the information about the entry is written to the status log file. If the file has entries in it the contents of the file are written to the printer port with no special formatting. There are no printer specific commands used to print the file, so this command should work with any printer connected to the parallel port of the Controller. After the file is printed, the status log file can be deleted after double confirmation.

Options Management Menu (continued)

Backing Up the Phone List Files

The backup phone list option allows you to protect your receiver and sender lists with a backup file and also allows you to create multiple lists for quick retrieval. The backup phone list option also backs up the MMMFAX Configuration File. Receiver and sender lists can be backed up from the Receiver and Sender Menus.

Selecting the Backup Phone List Files from the Options Management Menu initiates a backup function to copy the phone list files and MMMFAX Configuration File to a diskette in Drive A. If the diskette is not inserted properly or Drive A cannot be accessed for any reason when **Enter** is pressed, an error message is displayed and the backup will not be completed. When the diskette is inserted correctly, the backup procedure continues, copying the files to Drive A and updating the backup date in the window on the screen.



Note

To format a diskette, see Formatting a Backup Diskette, page FC-31.

1. Highlight "Options Management Menu" from the Main Menu and press **Enter**.

Note

To return to the Main Menu, highlight "Return to Main Menu" and press **Enter**.

2. Highlight "Backup Phone List Files" and press **Enter**.

Insert backup diskette in Drive A, press **Enter** when ready

Note

To return to the Options Management Menu, press **Esc**.

3. Insert the backup phone list diskette into Drive A of the Controller and press **Enter**. The display will read "Working" and when completed:

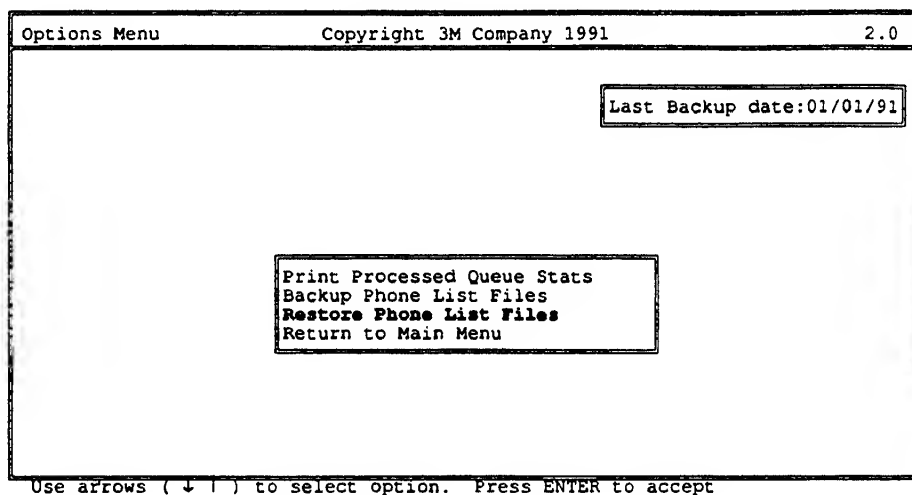
Backup complete

Options Management Menu (continued)

Restoring the Phone List Files

"Restore Phone List Files" is selected from the Options Management Menu to restore phone list files that have previously been saved using the "Backup Phone List Files" option. The files are copied from the backup diskette in Drive A to the MMMFAX directory. If the wrong diskette is inserted, or the files cannot be found, the procedure is terminated. The current phone list files on Drive C are destroyed. Care should be taken that the files have been previously backed up if you wish them to be saved. See Backing Up the Phone List Files, page FC-24.

Use the following Keys in the Main Menu:	
↑ highlights the option above. ↓ highlights the option below.	End-highlights the last option. Home-highlights the first option.



1. Highlight "Options Management Menu" from the Main Menu and press **Enter**.

Note

To return to the Main Menu, highlight "Return to Main Menu" and press **Enter**.

2. Highlight "Restore Phone List Files" and press **Enter**.

Insert diskette to restore in Drive A, press Enter when ready

Note

To return to the Options Management Menu, press **Esc**.

3. Insert the backup phone list diskette into Drive A of the Controller and press **Enter**. The display will read "Working" and when completed:

Restore complete

Changing the MMMFAX Configuration File

The MMMFAX Configuration File is used to modify the parameters for FAXing. The file can be changed to customize the FAXing operation for greatest efficiency. Review page FC-27 through FC-32 before attempting to change the MMMFAX parameters. You can:

Note

The values shown are default.

- Change the number of FAX Interface Boards the program uses during aliasing from 1 to 3.
- Change the time between retries from 5 minutes to any number of minutes between 0 and 32,367.
- Change the number of retries from 5 to any number of retries between 0 and 32,767.
- Change from a variable CSID (Customer Sender Identification) taken from the first 20 characters of the subject line to a constant CSID identified by the MMMFAX Configuration File.
- Type a CSID of your choosing up to 20 characters in length.
- Change FAX number aliasing from off to on.
- Change automatic deletion of the processed log from off to on.
- Change the position of the Cover Sheet as it is received at the remote location from first page to last page.
- Change the position of the Cursor when the Cover Sheet is first displayed from the Receiver Field to the Subject Field.
- Change from retaining the current Cover Sheet information for the next Cover Sheet to displaying a blank Cover Sheet Menu.
- Change the language displayed on the monitor from English to OUS English. The only difference between English and OUS English is the order the date is presented. The order of the English date as used in the United States of America is month/day/year. The order of the OUS English date as used in Europe is day/month/year.
- Change the system type from Manual to Embedded FAX Number Translation or Phone List Translation.
- Change the display of the destination field on pending and processed logs from displaying the last name of the receiver to the subject.
- Change the current substring for FAX destination fields from starting at position 1 to a new substring position up to 250.

After all the parameters have been reviewed, the MMMFAX Configuration File is complete and control is returned to DOS. The new values will be in effect the next time the MMMFAX File is executed.

Changing the MMMFAX Configuration File (continued)

1. From the Main Menu, highlight "Exit 3MFAX" and press **Enter**.

C:\MMMFAX>

2. Key in "**config**" and press **Enter**.

```
Configuration Program
Copyright 3M Company 1991
Version 1.2
```

```
Enter Password:
```

Use the following keys in the MMMFAX Configuration File:

↓ Moves the Cursor to the next option, circular.

↑ Moves the Cursor to the previous option, circular.

Backspace Editing key, deletes the entry just made.

Enter Accepts the entry and moves the Cursor to the next option except "Auto Delete". Pressing **Enter** at the Auto Delete option field displays the FAX Alias Table Menu.

Esc Returns the screen to the C:\MMMFAX prompt.

F2 Clears the field the Cursor is in.

Tab Moves the Cursor to the next option, circular.

Shift/Tab Moves the Cursor to the previous option, circular.

Below is a sample of the Configuration File menu showing the default values:

```
FAX Boards(1-3):1    Retry time(0-32767):5    Retries(0-32767):5

CSID(0,1):1          CSID String:12345678901234567890
 0 = Cover Sheet
 1 = CSID String

FAX Alias(0,1):0      Edit Table(0,1):1          Auto delete(0,1):0
 0/1 = Off/On         0/1 = Off/On              0/1 = Off/On
                      Table has 0 entries

Cover Order(0,1):0    Cover Cursor(0,1):1        Retain cover(0-1):1
 0 = first             0 = receiver Field        0/1 = Off/On
 1 = last              1 = subject field

Language(1-2):1        System type(0-2):0          Log destination
                        0 = Manual              field(0,1):0
                        1 = Embedded FAX Number 0 = receiver field
                        2 = Phone List translation 1 = subject field
FAX destination string(1-250):1
```

Changing the MMMFAX Configuration File (continued)

3. Key in the password "4560" and press **Enter**. The menu shown on the previous page is displayed with the Cursor in the field of the first option. Press **↓**, **Tab**, or **Enter** to accept the current parameter and move the Cursor to the next option. Limits of each option are shown within "()". Continue as follows:

Fax Boards (1-3) : 1

4. Key in the number of FAX Boards (from 1 to 3) installed in your system and press **Enter**.

Retry time (0-32767) : 5

5. Key in the desired time in minutes between FAX transmission retries (if other than 5 minutes) from 0 minutes to 32,767 minutes and press **Enter**.

Retries (0-32767) : 5

6. Key in the number of FAX transmission retries from 0 to 32,767 and press **Enter**.

CSID (0,1) : 0

7. Key in **0** if you wish the CSID (Customer Sender Identification) to be defined by the cover sheet, or **1** by the MMMFAX Configuration File.

CSID string: 000-0000

8. If you keyed in a **0** in Step 7, key in the name of company. Do not use the phone number of the FAX line. Otherwise, continue with Step 15.

FAX Alias (0,1) : 0

Note

Aliasing is used in high volume situations where the receiver has up to three FAX units at one location. A single artificial FAX number is used. With aliasing ON, the artificial number directs the system to use one of the alias phone numbers which is the actual number of that FAX unit. If unit #1 is busy, aliasing automatically sends to Unit #2, etc. Because all units are at the same site, the document delivery time (from scan to delivery) is shortened. The MMMFAX software looks at the units and sends to the unit with the fewest number of pages queued to it. The Cover Sheet is also modified to show the new FAX number.

Configuration Program- FAX Alias Table

Version 1.2

FAX number	Alias 1	Alias 2	Alias 3
Use the following keys while in this screen:		*	Place in front of the area code to indicate a long distance number.
Backspace Deletes last key entry.		(Place in front of a series of numbers (such as an area code) for separation.
F5 Press to add a FAX number and aliasing numbers.)	Place in front of a series of numbers (such as an area code) for separation.
F8 Press to clear the current FAX number and aliasing number fields (numbers must have been entered).		;	Insert a delay for second dial tone.
# Use to indicate an international number.		,	Inserts a 1-1/2 second pause

Changing the MMFAX Configuration File (continued)

9. Press **F5** to add a FAX number.
Enter Fax number
10. Key in the FAX number and press **Enter**.
11. Key in the first alias number and press **Enter**.
12. Key in the second alias number and press **Enter**.
13. Key in the third alias number and press **Enter**.
14. Press **Esc** to return to the MMFAX Configuration File screen.
Auto delete (0,1) : 1
15. Key in the Processed Log auto delete option (0 for off or 1 for on) and press **Enter**. Auto delete ON deletes a record having a "good" status from the processed queue whenever another document is processed.
Cover Order (0,1) : 0
0 = first
1 = last
16. Key in the code for the order (0 for first or 1 for last) in which you want the Cover Sheet to be placed when FAXing a document package, and press **Enter**.
Cover Cursor (0,1) : 0
0 = receiver Field
1 = subject field
17. Key in the code for the position (0 for the receiver field or 1 for the subject field) where you would like the Cursor to be located each time a new cover sheet is displayed, and press **Enter**.
Retain Cover (0,1) : 0
0 = Off
1 = On
18. Key in the code for whether or not you wish the cover sheet information regarding the receiver and sender to appear in the appropriate fields in the next cover sheet. Press **0** if you do not want to retain the information from the previous cover sheet, or if you are FAXing with an On-Line System (see FAXing with On-Line Systems, Page FC-15). If the information is not retained, the receiver/sender fields will be blank each time a new cover sheet is displayed.
Language (1-2) : 1
1 = English
2 = OUS English
19. Key in the code for the language (1 for English, 2 for OUS English) you wish the Controller Display to read and press **Enter**.

Changing the MMFAX Configuration File (continued)

```
System type(0-2): 0
0 = Manual
1 = Embedded FAX Number
2 = Phone List translation
```

20. Key in **0** for manual or FileSaver, **1** for Embedded FAX# Translation such as DMS, or **2** for Phone List Translation such as WorkManager, and press **Enter**.

- Manual Mode is used with all operations where the Cover Sheet and FAX Number are selected or created by the operator, including system having FileSaver software.
- Embedded FAX Number translation is used with DMS and "Initiate On-Line FAX" from the Main Menu. The Cover Sheet is built from label information in the download string with the FAX number surrounded by "@" characters (for example @555-0000@). Embedded FAX# translation can be used only when MPI is installed and DMS software is used. Other software may be usable in the future.
- Phone List Translation is used with WorkManager and "Initiate On-Line FAX" from the Main Menu. The Cover Sheet is built from information embedded in the routing code of the Phone List. The information is usually a 2-digit routing code defined by Workmanager. Phone List Translation can be used only when MPI is installed and WorkManager software is used. If the code within the download cannot be translated to a valid remote FAX telephone number, a blank Cover Sheet will display. The blank Cover Sheet must then be completed manually.

```
Log Destination field
0 = receiver field
1 = subject field
Enter new choice (0,1): 0
```

21. Key in whether you prefer the FAX Destination Field on the Pending and Processed Logs to display the last name or the subject and press **Enter**.

```
FAX destination string(1-250): 1
```

22. Key in the desired routing code "start" character position for the FAX destination field substring and press **Enter**.

```
*****
CONFIGURATION IS COMPLETE
*****
```

23. Press **Esc** to leave the Configuration File and return to DOS.

```
C:\MMFAX>
```

24. Key in **mmmfax** and press **Enter** to return to the Main Menu.

Formatting a Backup Diskette

A 1.44 MB 3-1/2 inch floppy disk is recommended for backing up the receiver and sender phone lists and customized MMMFAX Configuration File. A single DOS (Disk Operating System) command formats the diskette. To format a disk:

1. Highlight "Exit MMMFAX" and press **Enter**. Then press **Y** to confirm the exit. The system exits the MMMFAX program and enters the DOS (Disk Operating System) program.

C:\MMMFAX>

2. Type "**format a:**" and press **Enter**.

Insert new diskette for Drive A:
and press ENTER when ready...

3. Insert a new diskette into Drive A of the Controller and press **Enter**.

Format Complete Volume Label (11 characters, ENTER for none)?

4. Key in an internal volume name for the diskette if desired and press **Enter**, or simply press **Enter**.

XXXXXXX bytes total disk space
XXXXXXX bytes available on disk

YYY bytes in each allocation unit
ZZZZ allocation units available on disk

Volume Serial Number is xxxx-xxxx

Format another (Y/N)?

5. To format another diskette, press **Y** and repeat Steps 3 and 4. Otherwise, press **N**.

C:\MMMFAX>

6. To return to the Main Menu from DOS, type **mmmfax** and press **Enter**.

Specifications

Controller

Processor (CPU) 16-bit Intel 286 operating at 12.5 MHz

BIOS Phoenix, 64 KB EEPROM with on board setup

Expansion Available for user requirements:
one 8-bit and five 16-bit slots: one dedicated 386/486 Feature Connector

Memory 286 motherboard contains 1 MB of standard memory and four rows of SIMM connectors (2 rows per bank) to add an additional 4-MB.

System 16 MB total system expansion using third party 16-bit memory expansion cards

Floppy/Hard Disk Subsystem
Floppy Drive One 1.44 MB 3-1/2 inch floppy disk drive

Hard Disk Drive 110 MB

I/O Ports one serial, parallel and Keyboard port

Keyboard 101 enhanced keys

Dimensions

Height 6 in. (152.5 mm)

Width 15 in. (381.0 mm)

Depth 17 in. (431.8 mm)

Weight 35 lb (15.88 kg)

Specifications (continued)**Monitor**

Picture Tube	14 in. (355.6 mm) non-glare screen 90 deflection angle P22, tint glass Dot pitch: 0.31 mm
Scan Frequency (automatic)	Horizontal 31.5 Khz, 35.2 KHz Vertical 60/70 Hz
Input Signals (video)	Analog signal (positive) Bandwidth: 30 MHz
Input Signals (sync)	Horizontal 31.5 KHz, 35.2 KHz (automatic) TTL Level, positive/negative Vertical 60/70 Hz TTL Level, positive/negative, non-interlaced
Input Connector	15-pin D-Subminiature
Display Size	9.65 in. by 7.09 in. (245 mm by 180 mm)
Misconvergence	At center: 0.3 mm max. At corners: 0.5 mm max.
Power Requirement	110 VAC, 60 Hz 220 VAC, 50 Hz 240 VAC, 50 Hz
Power Consumption	70 watts max.
Tilt and Swivel Base	Tilting Range: -5° to +15° Rotating Range: -45° to +45°
Physical Dimensions	
Height	11.81 in. (300 mm)
Width	14.17 in. (360 mm)
Depth	15.16 in. (385 mm)
Weight	28.66 lb. (13 Kg)

Specifications

Controller

Processor (CPU) 16-bit Intel 286 operating at 12.5 MHz

BIOS Phoenix, 64 KB EEPROM with on board setup

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Dimensions

Height 6 in. (152.5 mm)

Width 15 in. (381.0 mm)

Depth 17 in. (431.8 mm)

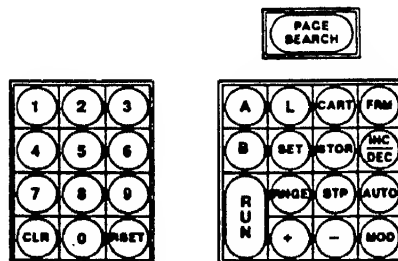
Weight 35 lb (15.88 kg)

Table Of Contents

Page Search Modes of Operation	PS-2
Checking the Current Search Mode	PS-2
Locating an Image Using the 7756 Page Search	PS-3
Printing by Batches from the Page Search	PS-5
Range Auto-Printing from the Page Search	PS-6
FAXing Document Packages	PS-7
FAXing a Single Document Package from the Reader-Scanner	PS-7
FAXing by Batches from the Page Search	PS-8
Range Auto-FAXing from the Page Search	PS-9
Control Key Functions	PS-10
Main Keys	PS-10
Miscellaneous Keys	PS-13
Memory Register Keys	PS-16
Step Keys	PS-19
Auto Keys	PS-23
Memory Register Autoscanning Exercise	PS-28
Summary of Key Functions and Command Key Sequences	PS-29
Search Modes	PS-36
Modes 1, 2, 3, and 4 (Films with One Blip Size)	PS-36
Mode 5 (Batch B-A) Blipped Films)	PS-37
Modes 6, 7, 8, and 9 (Films with Two Blip Sizes)	PS-38
Modes 10, 11, 12, and 13 (Films with Three Blip Sizes)	PS-39
Mode 14 (Odometer mode for Films with no Blips)	PS-40
Mode 15 (Miracode Film)	PS-40
Modes 16, 17, and 18 (Films with One Blip Size)	PS-41
Reading Film Control Codes	PS-42
Cleaning the Filter Glass and Plastic Window	PS-44
Operating in a Computer Communications Setup	PS-46
Introduction	PS-46
Preparing for Operation in a Communications Mode	PS-46
To Direct Search in any Mode	PS-47
Performing a Download in a 3M Enhanced	
Download Mode	PS-47
Performing a Download in 3M Download Mode	PS-47
Performing a Download in CAR Mode	PS-48
Going to Direct Search Mode from 3M Download	PS-48
Stepping, Auto-Scanning, or Auto-Printing after a Download	PS-48
Temporarily Interrupting Step, Autoprint, or Autoscan	PS-49
Special Two-Way Messaging Functions	PS-49
Communications Command Codes	PS-50
Typical 7710/API Application with Controller	PS-51
7756 Page Search Specifications	PS-54
Blip Encoding Specifications	PS-55

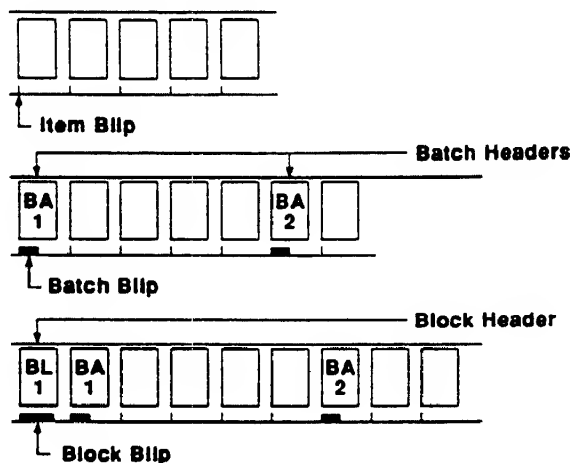
Page Search Modes of Operation

Your 7756 Page Search is designed to retrieve images on film that contains document marks (blips) adjacent to the images. Microfilm can be coded in a great number of blip patterns, or search modes. Your Page Search can operate in 18 modes described in detail beginning on page PS-36 of this section. Essentially, the 7756 search modes can be categorized as follows:



- **Single-Level Modes**--These include films that contain small blips (Modes 1 - 4 and 15 - 18). Small blips are referred to as "Item" blips.
- **Two-Level Modes**--These include films that contain small and medium blips (Modes 6 - 9). Medium blips are referred to as "Batch" blips.
- **Three-Level Modes**--These include films that contain small, medium, and large blips (Modes 10 - 13). Large blips are referred to as "Block" blips.

Page Search Modes



Checking the Current Search Mode

1. Press **MOD** on the Page Search Keyboard to display the current Search Mode on the Page Search Display:

MOD X

2. To remain in the same mode, simply press **CLR**.

Note

Film cannot be loaded while you are changing the Search Mode. If film is loaded, press **CLR** and **RUN** on the Page Search Keyboard to rewind and eject the cartridge.

3. To change the mode, key in the number of the desired mode (1-18). See pages PS-36 through PS-41.

MOD XX

4. Press **MOD**.
5. Press **MOD** again to confirm the mode.

Locating an Image Using the 7756 Page Search

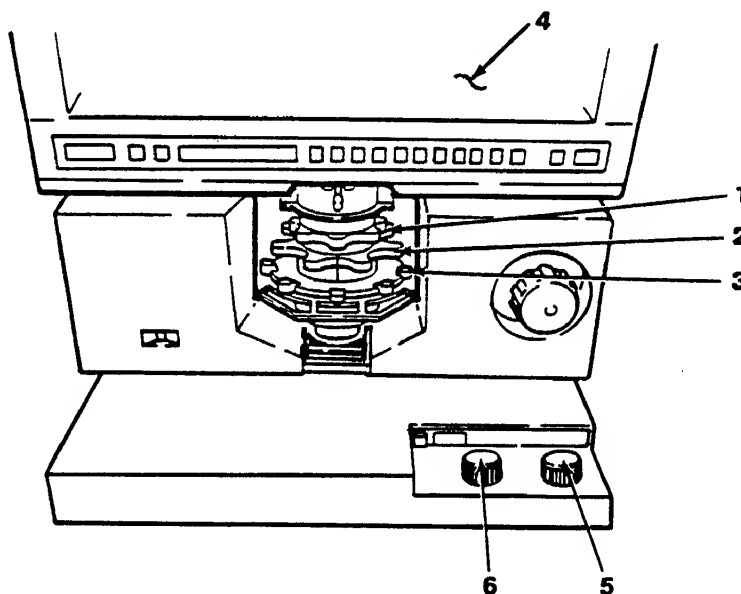
Use the following general procedure to locate an image using the Page Search Keyboard. The procedure for entering document numbers varies with the search mode. See page PS-2 to check the current mode.

1. Having checked or changed the Search Mode (see page PS-2) and loaded a film cartridge (see tabbed section "OPERATING SEQUENCE", Loading a Film Cartridge, page OS-4), key in the number of the desired document at the Page Search Keyboard. The keying sequence will vary, depending on the Search Mode (see pages PS-36 through PS-41). If you enter an incorrect document number, press CLR, and reenter the number.

Note

If you wish to stop film motion at any time during search, press CLR.

2. Key in the document number and press RUN. The film will drive to the requested document and stop.



3. Having an image displayed on the Viewing Screen, turn the Image Rotation Wheel (1) to rotate the image if necessary.
4. Turn the green Zoom Wheel (2) to the highest magnification.
5. Adjust the Focus Wheel (3) for the sharpest image on the Viewing Screen (4).
6. Turn the Zoom Wheel (2) to the lowest magnification.
7. If the image is not sharp and clear, repeat steps 4 thru 6 for the best overall focus at both extremes of the zoom range. After the focus is set, you will not have to refocus the lens when you change magnification.

Locating an Image Using the 7756 Page Search (continued)

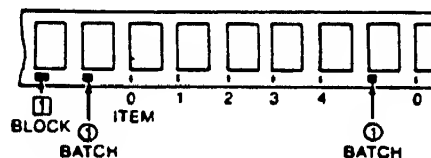
8. Turn the Manual Film Scan Control (5) to horizontally center the image within the vertical boundaries of the grid on the Viewing Screen (4).
9. Turn the Film Traverse Control (6) to center the image within the horizontal boundary of the grid on the Viewing Screen (4). On multi-level film, turn the Film Traverse Control (6) clockwise to move to images in the A blip row or counterclockwise to move to images in the B blip row.
10. Turn the Zoom Wheel (2) to make the image as large as possible within the boundaries of the grid on the Viewing Screen (4). If you cannot fit the image within the boundaries, change the Zoom Lens Assembly (see tabbed section "READER-SCANNER", Changing the Zoom Lens Assembly, page RS-40).
11. Continue to enter frame numbers and press **RUN** to retrieve desired documents. The Page Search will automatically locate each document and display it on the Viewing Screen.
12. To automatically view film, pausing at selected intervals, use the STEP function (see Step Keys, page PS-19).
13. To enter a series of document numbers into the memory for searching, use the MEMORY REGISTER function (see Memory Register Keys, page PS-16).
14. To change the position at which an image normally stops during page search:
 - a. Search to a document.
 - b. Press **B SET**.
 - c. Turn the Manual Film Scan Control to reposition the image as desired.
 - d. Press **CLR**.
15. To rewind the film, press **RUN** without entering a document frame number.

Printing by Batches from the Page Search

If you are using film that has Block and/or Batch blips, as well as Item Blips, you can print a complete Block or Batch as follows:

Note

The 7710 Reader-Scanner must be in the Printer mode.



If you wish to batch FAX, you must change the 7710 to the Scanner Mode. See FAXing by Batches from the Page Search, page PS-8.

1. Position the film to display a Block or Batch Header.

Note

To stop printing at any time, press **CLR**.

2. Press **B PAGE SEARCH**. (The machine will drive the film to the end of the Block or Batch. Then it will print all frames back to the header position.)

To change to the Print Mode for Batch Printing:

Note

In Print Mode, print images are generated.

1. From the 7710 Keyboard, press **TEST**.

```
-----Test Mode-----
Test = 2
Enter 1 thru 0
```

2. Press **9**.

```
-----Test Mode-----
Test = 9
Enter 1 thru 0
```

3. Press **ENTER**.

```
PS Auto Mode
Enter SCAN or PRINT
```

4. Press **PRINT**.

```
Ready
```

Range Auto-Printing from the Page Search

If you want the machine to automatically print while "stepping" from image to image, use the Auto-Print function. See Auto-Function Keys, page PS-23 for more detailed procedures. Auto-Printing allows you to print a range of documents.

Note

The 7710 Reader-Scanner must be in the Reader-Printer mode.

- To automatically print all frames, starting from the current position on film, press **AUTO**.

Note

To stop printing at any time, press **CLR**.

Examples:

- To store a print quantity for use during Auto-Printing, set a print quantity value. (This value will remain in effect until power is removed from the machine or until a new print quantity is set.)
To store a quantity of 3:
3 SET AUTO
- To print a range of documents, enter the lower and upper limits of the range and press **AUTO**.
To set a range of 50:
1 RNGE 50 RNGE AUTO
(This prints images 1 through 50 on single-level films.)

Note

Range Auto-Printing can be done on film blipped in any mode, whether the film contains two or three sizes of blips, or only one size. Normally the printing is sequenced in the order shown in the example above, the image with the lowest number address being printed first and the highest address printed last. However, if the film used is single-level, the printing can be done in reverse range order. That is, the document with the highest number address can be printed first. However, as prints exit the 7940 Laser Printer face down, they will **not** be in numerical order.

- To Auto-Print in reverse range order, simply enter the upper limit of the range first.
50 RNGE 1 RNGE AUTO
(This prints images in the order 50 through 1, so they will print 1 on the top and 50 on the bottom.)

FAXing Document Packages

FAXing a Single Document Package from the Reader-Scanner

Note

The 7710 Reader-Scanner must be in the Reader-Scanner Mode.

To electronically transfer document images from the 7710 Reader-Scanner to the 7960 Controller for FAXing to a remote location when images are located by the 7756 Page Search:

Note

If documents are to be downloaded from a host computer using 3M-supplied software, see Operating in a Computer Communications Setup, pages PS-46 through PS-53.

1. Highlight "Transfer Images from 7710" from the Controller Main Menu using the ↑ and ↓ keys and press **ENTER**.

7710 Scanner Display

Ready

2. Press **SCAN** on the Reader-Scanner Keyboard.

----Scan Mode----

Scanning

Ready

7960 Controller Display

Ready to transmit scan images...
Waiting for scan image 1

Ready to transmit scan images.....
Waiting for scan image 1
Reading scan image 1
Clearing scan image 1
Waiting for scan image 2

Note

You must wait for the "Ready" message on the Scanner Display before pressing **SCAN** again.

If the Reader-Scanner Projection Lamp goes out and the Scanner Display reads "Standby" press the **ENTER** Key on the Reader-Scanner Keyboard.

3. Continue locating microfilmed document images, enhancing their image (see tabbed section **READER-SCANNER**, pages RS-2 through RS-31) if desired, and pressing **SCAN** each time a new document image is to be transferred to the Controller for FAXing. You can include up to 99 images in one document package.

Note

If this batch of images transferred from the Reader-Scanner to the Controller is decided not to be FAXed to a remote location, press the **F1** Key on the Controller Keyboard to erase the images. The Controller will ask "Are you sure? (Y/N):". Pressing **Y** dumps the stored images and returns the Controller to wait for the new image 1 to be transferred. Pressing **N** returns the Controller to wait for the next image to be transferred.

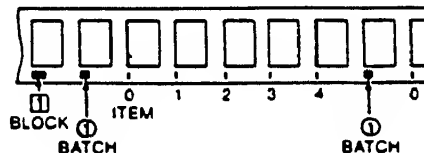
4. Press the **Esc** Key on the Controller Keyboard when you have completed the batch of document image transfers, and return to the Main Menu.
5. Highlight "Create FAX Cover Sheet" from the Main Menu using the ↓ and ↑ keys, if needed, and press **Enter**. The Cover Sheet displayed on the Controller Display will display the last receiver and the last sender highlighted. See tabbed section "CONTROLLER" Creating the Cover Sheet, page FC-7.
6. Review the Cover Sheet information displayed on the Controller Display. If the information is correct, press **End** to move the cursor to the Subject Field, type in the subject (60 characters and spaces maximum), and press **Enter**. To edit the Cover Sheet, see tabbed section "CONTROLLER", Creating the Cover Sheet, page FC-7.

FAXing by Batches from the Page Search

If you are using film that has Block and/or Batch blips, as well as Item Blips, you can FAX a complete Block or Batch as follows:

Note

The 7710 Reader-Scanner must be in the Scanner Mode.



Note

If you wish to batch print, you must change the 7710 to the Reader-Printer Mode. See the procedure to change modes, and "Printing by Batches from the Page Search", page PS-5.

1. Position the film to display a Block or Batch Header.

Note

To stop at any time, press **CLR**.

2. Press **B PAGE SEARCH**. (The machine will drive the film to the end of the Block or Batch. Then it will print all frames back to the header position.)

Note

If an error occurs, press **F1** on the Controller Keyboard to dump the scanned images, preventing a partial document package from being FAXed, and rescan the batch. See tabbed section "FAX CONTROLLER", page FC-5, for a brief description of what occurs.

To change to the Scan Mode for Batch FAXing:

Note

In Scan Mode, scan images are generated by a page search auto sequence.

1. From the 7710 Keyboard, press **TEST**.

```
-----Test Mode-----
Test = 2
Enter 1 thru 0
```

2. Press **9**.

```
-----Test Mode-----
Test = 9
Enter 1 thru 0
```

3. Press **ENTER**.

```
PS Auto Mode
Enter SCAN or PRINT
```

4. Press **SCAN**.

```
Ready
```

Range Auto-FAXing from the Page Search

If you want the machine to automatically FAX while "stepping" from image to image, use the Auto Print function. See Auto-Function Keys, page PS-23 for more detailed procedures. Auto-FAXing allows you to FAX a range of documents.

Note

The 7710 Reader-Scanner must be in the Scanner Mode.

- To automatically scan all frames, starting from the current position on film, press **AUTO**.

Note

To stop FAXing at any time, press **CLR**.

- To store a FAX quantity for use during Auto-FAXing, set a FAX quantity value.
- To scan a range of documents, enter the lower and upper limits of the range and press **AUTO**.

To store a quantity of 3:
3 SET AUTO

To set a range of 50:
1 RNGE 50 RNGE AUTO
(This scans images 1 through 50 on single-level film.)

Note

Range Auto-FAXing can be done on film blipped in any mode, whether the film contains two or three sizes of blips, or only one size. Normally the FAXing is sequenced in the order shown in the example above, the image with the lowest number address being FAXed first and the highest address FAXed last. However, if the film used is single-level, the FAXing can be done in reverse range order. That is, the document with the highest number address can be FAXed first, so that the FAXes will be stacked in numerical order as they exit the FAX machine.

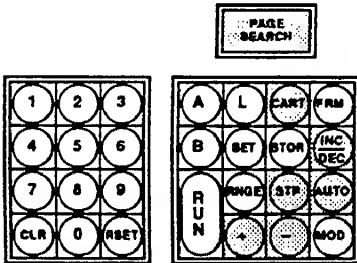
- To Auto-FAX In reverse range order, simply enter the upper limit of the range first.
- To change from Printer Mode to Scanner Mode, key in the following from the 7710 keyboard:

50 RNGE 1 RNGE AUTO
(This FAXes images in the order 50 through 1, so they will FAX 1 on the top and 50 on the bottom.)

<u>Key(s)</u>	<u>Function</u>
TEST	Enter test mode
5	Enter key operator mode
ENTER	Display key operator menu
4560 ENTER	Gain access
3 ENTER	Select 7710 mode
246 ENTER	Select option
1 ENTER	Change to Scanner Mode
CANCEL CANCEL	Return to ready

Control/Key Functions

Main Keys



These keys are used to control standard page search operations:

- Entering document numbers into the system and initiating search.
- Rewinding film.
- Stopping film drive and clearing data from the Display.
- Resetting the blip count into the system.

The functions of each key are described below. Note that the keys can be used in combination with either keys on the Keypads to perform "special functions," in addition to their standard functions.

PROCEDURES	KEYS	FUNCTIONS
To enter number values into the system:	0 thru 9	<ul style="list-style-type: none"> • Enter document numbers in the system for search. • Enter values into the system for number of prints, print masking, step time delays, test commands, etc.
To rewind film:	RUN	With no preceding number entry, starts film rewind.
To search for documents on film:	<p>100 RUN</p> <p>MOD RUN</p> <p>FRM RUN</p>	<p>With a preceding number entry, starts search to the specified document. Note: Procedures for keying in numbers for search vary with the machine mode. See Search Modes pages PS-36 through PS-41, for detailed instructions.</p> <p>Retrieves the frame displayed just previously to the current frame.</p> <p>Retrieves the frame identified in the currently accessed Memory Register (see Memory Register Keys, page PS-16 for more details). Note: If a cartridge number is stored in the register, film will rewind.</p>

Main Keys (continued)

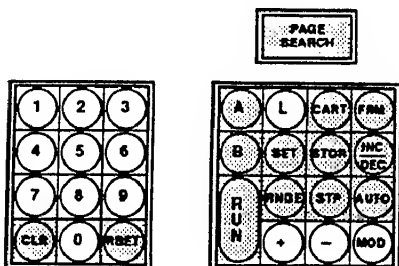
PROCEDURES	KEYS	FUNCTIONS
To search for documents on film (continued)	B RUN	Commands system to continue searching. The desired frame is in another location. (Used with film that has Film Control Code.)
	CLR	Serves as a "delimiter" (separator) between Block, Batch, and Item numbers in multi-blip document entries (see Search Modes, pages PS-36 through PS-41).
	A L	Commands system to read the A row blips, but leave the B row blip sensors active.
To send programmed Message A:	L A	Sends Message A to the host computer. (Used only in systems with a Communications Kit operating in 3M Enhanced Download Mode.)
To set a new stopping position for images on Viewing Screen:	B SET	Used with 210 CAT Film Speed Control and CLR to change stopping position of images on screen (see Locating an Image using the 210 CAT Film Speed Control, page PS-3).
To initiate Batch printing:	B PAGE SEARCH	Used to print or scan a complete Block or Batch of images on multi-level blipped film (see FAXing by Batches from the Page Search, page PS-8).
	SET B PAGE SEARCH	Same as B PAGE SEARCH

Main Keys (continued)

PROCEDURES	KEYS	FUNCTIONS
Miscellaneous B Key functions:	B	B with the following keys re-defines the functions of the keys: AUTO, RUN, STP, STOR. (Refer to the instructions for each key.)
To send programmed message B :	L B	Sends message B to the host computer. (Used only in systems having a Communications Kit operating in 3M Enhanced Download Mode.)
To stop a machine function or clear the Display:	CLR	Pressed to: <ul style="list-style-type: none"> • Clear data from the Display. • Stop a machine automatic function. Note: The Step and Auto-Scan functions can be resumed from stop by pressing B STP or B AUTO .
To clear a range value from memory:	CLR RNGE	Clears (erases) the current Step or Auto-Scan range value from the Memory Registers.
To clear the Memory Registers:	CLR STOR	Clears all cartridge and frame numbers from memory and accesses Register 1.
To reset a number into the Display and reset the Counter:	100 RSET	Sets the Display to the preceding number entry (100 in this example and resets the count at the sensors).
To preset a number into a Memory Register:	8 RSET STOR	Sets the currently accessed Memory Register to the preceding number (8, in this example).
To reset a Communications Receiver:	L RSET	Sets the Communications Kit Data Receiver to its initial state.

Miscellaneous Keys

The following four keys on the Page Search Keyboard perform "miscellaneous" functions:



- **MOD** -- Used to display or change the current machine operating mode. Also used to display a number code which can be used to find further descriptive information relating to a displayed operator message. Serves also as a "SHIFT" key to redefine other key functions.
- **L** -- Used to define a preceding 4-digit number as a diagnostic code or operator command. Serves also as a "SHIFT" key to redefine other key functions.
- **+** and **-** -- Used to move film one frame or to add to or subtract from the number on the Display.

PROCEDURES	KEYS	FUNCTIONS
To display the current machine operating mode:	MOD	<ul style="list-style-type: none"> • Displays the current machine page search mode (1 to 18). • When the machine halts and displays a special operator message, this key can be pressed to display a number code which refers to a more detailed explanation of the problem in the Operating Instructions.
To change the machine operating mode:	12 MOD	Changes the current machine page search mode to the mode specified by the preceding number (12, in this example).
Miscellaneous MOD key functions:	MOD	<p>MOD preceding any of the following keys redefines the functions of the key:</p> <p>AUTO, INC/DEC, RANGE, RUN, STOR, STP. (Refer to the functions for each key.)</p>
To enter a diagnostic code:	1204 L	The four-digit preceding number specifies a diagnostic code.

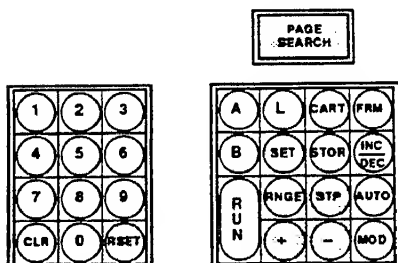
Miscellaneous Keys (continued)

PROCEDURES	KEYS	FUNCTIONS
Miscellaneous L Key functions:	L	<p>L preceding any of the following keys redefines the function of the key:</p> <p>A, B, CART, FRM, +, -, PAGE SEARCH, RSET, SET AUTO (Refer to the functions for each key.)</p>
To advance film one frame:	+	Advances the film one frame (blip).
To add to the displayed number and search to the sum:	50 +	<p>Adds the preceding number to the currently displayed number, and searches to the sum. For example:</p> <p>NUMBER ENTRY + DISPLAY SEARCH TO:</p> <p>1-Level 50 +65 Item 115</p> <p>Film</p> <p>2-Level 5 A 10 + 2 50 Batch 7, Item 10</p> <p>Film 0 A 10 + 2 50 Batch 2, Item 60</p> <p>3-Level 5 A 10 A 15 + 3 12 11 Bl.8, Ba.10, Item 15</p> <p>Film 0 A 10 A 15 + 3 12 11 Bl.3, Ba.22, Item 15</p> <p>0 A 0 A 15 + 3 12 11 Bl.3, Ba.12, Item 26</p> <p>Note: For each multi-level example, only one add operation occurs. The first non-zero number in the Block, Batch, Item entry is added to the corresponding number in the Display. Any following keyboard entry (Batch or Item) simply replaces its corresponding number in the Display.</p>
To indicate that a Communications Receiver can accept a download from the Host Computer:	L +	Prepares the Communications Kit Receiver (see Operating in a Communications Setup, page PS-46) to receive a download from the Host Computer. (Used only in systems with two-way messaging.)
To back up the film one frame:	-	Backs up the film one frame (blip).

Miscellaneous Keys (continued)

PROCEDURES	KEYS	FUNCTIONS
To subtract from displayed number and search to the difference:	50 -	<p>Subtracts the preceding number from the currently displayed number, and searches to the difference:</p> <p>NUMBER ENTRY - DISPLAY SEARCH TO:</p> <p>1 Level 50 - 65 Item 15</p> <p>Film</p> <p>2-Level 5 A 10 - 11 50 Batch 6, Item 10</p> <p>Film 0 A 10 - 11 50 Batch 11, It. 40</p> <p>3-Level 5 A 10 A 15 - 11 12 24 Bl. 6, Ba. 10, It. 15</p> <p>Film 0 A 10 A 15 - 11 12 24 Bl. 11, Ba. 2, It. 15</p> <p> 0 A 0 A 15 - 11 12 24 Bl. 11, Ba. 12, It. 9</p> <p>Note: For each multi-level operation only one subtract operation occurs. The first non-zero number in the entry is subtracted from the corresponding number in the Display. Any following keyboard entry (Batch or Item) simply replaces the corresponding number in the Display.</p>
To indicate that a Communications Receiver cannot accept a download:	L -	Indicates that the Communications Data Receiver (see Operating in a Communications Setup, page PS-46) is not ready to receive a download from the host computer. (Used only in systems with two-way messaging.)

Memory Register Keys



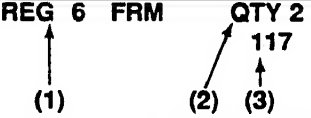
The 7756 includes 50 memory Registers that can be used to store cartridge and frame numbers temporarily, one to a register. The stored numbers can be referenced by the system to automatically sequence film via the Step and Auto-Functions (see pages PS-19 through PS-27). You can, for example, enter 50 frame numbers into the registers, then command the machine to step through these frames on film and scan the image for each. Numbers are keyed into the 50 registers and accessed as described below. **CAUTION: Pressing CLR STOR will clear (remove) all numbers stored in the Memory Registers.** Note: Some machines are equipped with Communications Kits that allow them to be connected with an external computer and terminal via a communications line. These machines can store cartridge and frame numbers from a computer data file in up to 750 Download Registers. (See Operating in a Communications Setup, page PS-46 for operating information.)

PROCEDURES	KEYS	FUNCTIONS
To display the next cartridge number in the Memory Registers:	CART	Displays (1) location of the next cartridge number stored in the Memory Registers, and (2) the cartridge number. REG 1 CART ↑ ↑ (1) (2)
To print cartridge numbers received in a download:	L CART	For machines operating in a communications system download mode (see Operating in a Communications Setup, page PS-46), L CART causes a printout of cartridge numbers after a download.
To display the next number (cartridge or frame) in the Memory Register.	FRM	Displays (1) location of the next number stored in the Memory Registers, (2) number of scans to deliver per autoprnt request, and (3) register contents. REG 5 FRM QTY 2 ↑ ↑ ↑ (1) (2) (3)
To print all cartridge and frame numbers received in a download:	L FRM	For machines operating in a communications system download mode (see Operating in a Communications Setup, page PS-46), L FRM causes a printout of cartridge and frame numbers after a download.

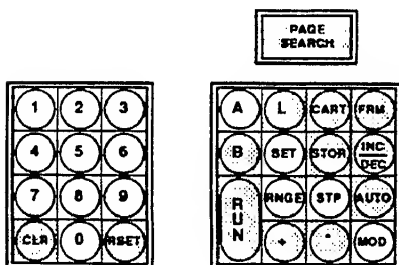
Memory Register Keys (continued)

PROCEDURES	KEYS	FUNCTIONS
To display the next number in the Memory Registers, then search to it:	FRM RUN	FRM accesses and displays the next number stored in a Memory Register. RUN then searches film to the identified frame. (If the number accessed is a cartridge number, the film will rewind.)
To access a desired Memory Register:	10 SET STOR	Accesses Memory Register specified by the preceding number. (The register number will not display.)
To store a cartridge number:	3 CART STOR	Stores cartridge number specified by the preceding number entry in the currently accessed Memory Register.
To store a frame number:	100 STOR ↑ B* 1 A 100 STOR ↑ B* 1 A 1 A 100 STOR ↑ B*	1-Blip Level Stores the indicated frame number in the currently accessed Memory Register. 2-Blip Level 3-Blip Level (Note: the FRM Key is not required.) * Inserting B ahead of the STOR Key specifies that the frame number is the starting point for a batch scan request.
To display contents of a Memory Register:	MOD STOR	Displays (1) contents of the currently accessed Memory Register, (2) number of scans to deliver per autorequest, and (3) register contents. <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> REG 6 ↑ (1) </div> <div style="text-align: center;"> FRM </div> <div style="text-align: center;"> QTY 2 117 ↑ (3) </div> </div> <div style="text-align: center; margin-top: -20px;"> (2) </div>
To increment a memory location, then display its contents:	INC/DEC	Increments the Memory Register location. Then displays (1) register number, (2) number of scans to deliver per Auto request, and (3) register contents. <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> REG 7 ↑ (1) </div> <div style="text-align: center;"> FRM </div> <div style="text-align: center;"> QTY 2 118 ↑ (3) </div> </div> <div style="text-align: center; margin-top: -20px;"> (2) </div>

Memory Register Keys (continued)

PROCEDURES	KEYS	FUNCTIONS
To decrement a memory location, then display its contents.	MOD INC/DEC	Decrements the Memory Register location. Then displays (1) register number, (2) number of scans or prints to deliver per Auto request, and (3) register contents. 
To Step film using stored values:	MOD STP	Steps film to all frames identified in Memory Registers. (See page PS-22 for more details.)
To Step film and scan using stored values:	MOD AUTO	Scans once all frames identified in Memory Registers. (See page PS-27 for details.)
To clear all values from the Memory Registers:	CLR STOR	Clears all numbers from the Memory Registers and accesses Register 1.
To store a scan quantity:	2 SET AUTO	Stores a value (2 in the example) for the number of scans or prints to be run during autoscanning or autoprinting. This value will apply to all succeeding frames entered until a new quantity is entered or until 7756 power is switched off, then on. If no quantity is entered, the number of scans for prints will default to one.

Step Keys



General Step
Control
Functions

The Step function allows you to set up a command sequence at the keyboard that will cause the film to step automatically from frame to frame. The following items can be preset:

- Pause time at each frame (in seconds).
- A range of frames, between specified lower and upper limits (inclusive).
- Step interval (every third frame, fourth frame, etc.).

The items described above are optional. That is, not all (or any) of them need be used in a command sequence. However, if used, they must be entered in the following order:

OPTIONS

- (1) PAUSE TIME (If no time is specified, pause time will be 1 second.)
- (2) RANGE
- (3) STEP INTERVAL (If no interval is specified, interval will be ONE.)
- (4) STEP COMMAND

1. • To stop stepping momentarily, press **CLR**.
• To resume stepping (from stop), press **B STP**.
• To terminate stepping and rewind film, press **CLR RUN**.
2. **MOD RANGE** -- This displays the currently stored range value.
3. **CLR RANGE** -- This clears the current step range value from memory.

FOR 1-LEVEL FILM (MODES 1-5 AND 15-18: ONE BLIP SIZE)

PROCEDURES	KEYS	FUNCTIONS
To Step to successive frames:	STP	Step from frame to frame, starting from current position on film.
To Step at intervals:	3 STP	Step to every third frame, starting from current position on film.
To set a pause time at each step.	40 SET STP STP	Step to every frame. Pause four seconds at each. (Pause time = 1/10 of entered number.)
To Step through a range of frames:	10 RANGE 50 RANGE STP	Set a range from frame 10 through 50 (inclusive). Step to each frame in the range.
To Step through a range of frames at intervals:	20 RANGE 100 RANGE 3 STP	Set a range from frame 20 through 100 (inclusive). Step to every third frame in the range.

COMPOSITE EXAMPLE

20 SET STP	1 RANGE 50 RANGE	5 STP
Set 2 Second Pause.	Range from Frame 1 thru 50.	Step to every 5th Frame.

Step Keys (continued)**FOR 2-LEVEL FILM (MODES 6-9: BATCH, ITEM BLIPS)**

PROCEDURES	KEYS	FUNCTIONS
To Step to successive Batch Headers:	STP	Step from Batch Header to Batch Header, starting from current position on film. (Equivalent to 1 A 0 STP .)
To Step to Batch Headers at intervals:	3 STP	Step to every third Batch Header, starting from current position on film. (Equivalent to 3 A 0 STP .)
To Step to successive Items in a Batch:	0 A 1 STP (or A 1 STP)	Step to all remaining items in the current Batch.
To Step in intervals to Items in a Batch:	0 A 1 STP (or A 1 STP)	Step to every third Item remaining in the current Batch.
To Step to the same Item in successive Batches:	1 A 1 STP	Step to the first Item in all remaining Batches.
To Step to Batch Headers at intervals in a range:	2 RNGE 20 RNGE 2 STP	Set a range from Batch 2 through 20 (inclusive). Step to every other Batch Header in the range.
To Step to all items in a particular Batch (using range):	3 RNGE 4 RNGE 0 A 1 STP	Set a range from Batch 3 to 4. Step to all Items in Batch 3.
To Step to Items at intervals in a range within a Batch:	2 A 1 RNGE 2 A 50 RNGE 0 A 2 STP	Set a range from Item 1 through 50 (inclusive) in Batch 2. Step to every other item in the range.

COMPOSITE EXAMPLE

30 SET STP	1 A 2 RNGE 1 A 25 RNGE	0 A 3 STP
Set 3 Second Pause.	Range from Item 1 thru 25 in Batch 1.	Step to every 3rd Item.

Step Keys (continued)

FOR 3-LEVEL FILM (MODES 10-13: BLOCK, BATCH, ITEM BLIPS) (continued)

PROCEDURES	KEYS	FUNCTIONS
To Step to successive Block Headers:	STP	Step from Block Header to Block Header, starting from current position on film. (Equivalent to 1 A 0 A 0 STP .)
To Step to Block Headers at intervals:	3 STP	Step to every third Block Header, starting from current position on film. (Equivalent to 3 A 0 A 0 STP .)
To Step to Batch Headers at intervals.	0 A 2 STP (or A 2 STP)	Step to every other Batch Header in the current Block. (Equivalent to 0 A 2 A 0 STP .) Note: Stepping must begin from a Batch or Item blip.
To Step to successive Items in a Batch:	A 0 A 1 STP (or A A 1 STP)	Step to every remaining Item in the current Batch. Note: Stepping must begin from an Item blip.
To Step to Items at intervals in a Batch:	0 A 0 A 3 STP (or A A 3 STP)	Step to every third Item remaining in the current Batch. Note: Stepping must begin from an Item blip.
To Step to a specified Batch and Item in successive Blocks:	1 A 1 A 3 STP	Step to Batch 1, Item 3 in all remaining Blocks.
To Step to Block Headers at intervals in a range of Blocks:	2 RNGE 10 RNGE 2 STP	Set a range from Block 2 through 10 (inclusive). Step to every other Block Header in the range.
To Step to Batch Headers at intervals in a range of Blocks:	1 A 3 RNGE 1 A 18 RNGE 0 A 3 STP	Set a range from Batch 3 through 18 (inclusive) in Block 1. Step to every third Batch Header in the range.
To Step to all Items in a particular Batch using range):	2 A 3 RNGE 2 A 4 RNGE 0 A A 1 STP	Set a range from Batch 3 to 4 in Block 2. Step to all Items in Batch 3.
To Step	3 A 3 A 1 RNGE 3 A 3 A 75 RNG 0 A 0 A 1 STP	Set a range from Item 1 through 75 (inclusive) in Block 3, Batch 3. Step to each Item in the range.

Step Keys (continued)**FOR 3-LEVEL FILM (MODES 10-13: BLOCK, BATCH, ITEM BLIPS)** (continued)COMPOSITE EXAMPLE

40 SET STP	2 A 3 A 1 RNGE	0 A 0 A 2 STP
Set 4 Second Pause.	Range from Item 1 thru 100 in Block 2, Batch 3.	Step to Every Other Item.

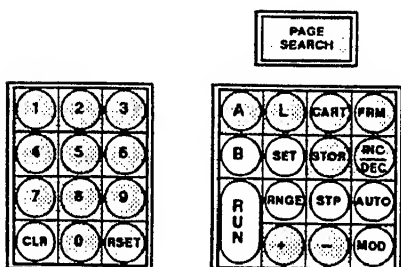
STEPPING FROM MEMORY REGISTERS

PROCEDURES	KEYS	FUNCTIONS
To Step to all frames identified in Memory Registers:	MOD STP	Step film to the frames identified by number in the Memory Registers. Note: If a cartridge number is found during Step, the film will rewind. At this point, load the cartridge identified on the Display. Stepping will continue automatically.

COMPOSITE EXAMPLE

40 SET STP	1 RNGE 30 RNGE	MOD STP
Set 4 second Pause.	Range from Register 1 thru 30.	Step Film. (Stepping at intervals is <u>not</u> allowed).

Auto Keys



The Auto Function Keys allow you to set up a command sequence that will cause the system to **step** film from frame to frame and **scan** or **print** document(s) at each step. **Auto-Scan** and **Auto-Print** are identical to **Step** except for adding the scanning or printing capability. Refer to the Step Function page PS-19 through PS-22 for more examples. Auto-Scan and Auto-Print are identical except for the destination of the image. The image data during Auto-Print goes to a local printer. Data during Auto-Scan could go to a PC FAX Controller or Host Computer. The following items can be preset in the Auto Scan or Auto Print commands:

- Pause time at each frame (in seconds).
- Number of scans or prints.
- A range of frames between specified lower and upper limits (inclusive).
- Step interval (every third frame, fourth frame, etc.).

The above items are optional. Not all (or any) of them need be used in a command sequence. However, if used, they must be entered in the following order:

(1) PAUSE TIME,

If No Time
is Specified,
Pause will be
1 Second.

(2) # OF SCANS
OR PRINTS,

If No Number is
Specified, One Scan
or Print will be Made.

(3) RANGE,

(4) STEP INTERVAL,

(5) AUTO COMMAND

If No Interval is
Specified, the Interval
will be One.

Notes

1. The keying procedures for specifying **range**, **pause time**, and **step interval** are identical for **Step** and **Auto-Scan** and **Auto-Print** functions. To save space, range examples are limited in the keying sequences below. Refer to the Step Function (pages PS-19 through PS-22) for more examples.
2. The number of scan or print quantities to be run during Auto Scanning or Auto Printing are stored in the Memory Registers along with the frame numbers. (See the **SET AUTO** function on page PS-24).

General
Auto
Control
Functions

1. • To stop Auto-Scanning or Auto-Printing momentarily, press **CLR**.
• To resume Auto-Scanning or Auto-Printing (from stop), press **B AUTO**.
• To terminate Auto-Scanning or Auto-Printing and rewind film, press **CLR RUN**.
2. **MOD RNGE** -- Displays the currently stored Auto-Scan or Auto-Print range value.
3. **CLR RNGE** -- Clears the current Auto-Scan or Auto-Print range value from memory.

Auto Keys (continued)**FOR 1-LEVEL FILM****(MODES 1-5 AND 15-18: ONE BLIP SIZE)**

PROCEDURES	KEYS	FUNCTIONS
To scan or print successive frames:	AUTO	Scan or print all frames, starting from current position on film.
To scan or print frames at intervals:	3 AUTO	Scan or print every third frame, starting from current position on film.
To set up a step pause, and scan or print successive frames:	40 SET STP AUTO	Step to each remaining frame, pause 4 seconds, and scan or print. (Pause time = 1/10 of entered number.)
To scan or print specified number of successive items:	3 SET AUTO AUTO	Do three scans or prints of all remaining frames.
To scan or print intervals:	SET AUTO 2 AUTO	Do one scan or print of every other frame.
To do a specified number of scans or prints at intervals.	3 SET AUTO 3 AUTO	Do three scans or prints of every third frame.

COMPOSITE EXAMPLE

20 SET STP	SET AUTO	5 RNGE 20 RNGE	5 AUTO
Set 2 Seconds Pause.	Do Two Scans or Prints.	Range From Frame 5 Thru 20	Step to and Scan or Print Every 5th Frame.

Note

For 1-Level Film only: To scan or print a range of items in reverse order, enter the higher range value first. This will cause the images to be sent in reverse order for receiving units that exit documents face up.

Auto Keys (continued)

FOR 2-LEVEL FILM (MODES 6-9: BATCH, ITEM BLIPS)

PROCEDURES	KEYS	FUNCTIONS
To scan or print successive Batch Headers:	AUTO	Do one scan or print of every Batch Header, starting from current position on film. (Equivalent to 1 A 0 AUTO .)
To scan or print Batch Headers at intervals:	3 AUTO	Do one scan or print of every third Batch Header starting from current position on film. (Equivalent to 3 A 0 AUTO .)
To scan or print successive Items in a Batch:	0 A 1 AUTO (or A 1 AUTO).	Do one scan or print of all remaining Items in the current Batch.
To scan or Print Items in a Batch at intervals:	0 A 2 AUTO (or A 2 AUTO)	Do one scan or print of every other Item remaining in the current Batch.
To make a specified number of scans or prints of Items at intervals:	2 SET AUTO 0 A 3 AUTO	Do two scans or prints of every third Item.

COMPOSITE EXAMPLE

30 SET STP	2 SET AUTO	2 A 5 RNGE 2 A 20 RNGE	0 A 2 AUTO
Set a 3 Second Pause.	Make Two Scans or Prints.	Range from Items 5 Thru 20 in Block 2.	Step to and Scan or Print Every Other Item.

Auto Keys (continued)**FOR 3-LEVEL FILM (MODES 10-13: BLOCK, BATCH, ITEM BLIPS)**

PROCEDURES	KEYS	FUNCTIONS
To scan or print successive Block Headers:	AUTO	Do one scan or print of all Block Headers starting from current position on film. (Equivalent to 1 A 0 A 0 AUTO .)
To scan or print Block Headers at intervals:	3 AUTO	Do one scan or print of every third Block Header, starting from current position on film. (Equivalent to 3 A 0 A 0 AUTO .)
To scan or print successive Batch Headers:	0 A 1 AUTO (or A 1 AUTO)	Do one scan or print of all remaining Batch Headers. Note: Stepping must begin from a Batch or Item blip.
To scan or print Batch Headers at intervals:	0 A 3 AUTO (or A 3 AUTO)	Do one scan or print of every third remaining Batch Header. Note: Stepping must begin from a Batch or Item blip.
To scan or print successive Items in a Batch:	0 A 0 A 1 AUTO (or A A 1 AUTO)	Do one scan or print of all remaining Items in the current Batch. Note: Stepping must begin from an Item blip.
To scan or print Items in a Batch at intervals:	0 A 0 A 3 AUTO	Do one scan or print of every third Item remaining in (or A A 3 AUTO) the current Batch. Note: Stepping must begin from an Item blip.
To do a specified number of scans or prints of Items in a Batch at intervals:	2 SET AUTO 0 A 0 A 4 AUTO	Do two scans or prints of every fourth Item.
To do a specified number of Item scans or prints at intervals:	2 SET AUTO 0 A 0 A 3 AUTO	Do two scans or prints of every third Item.

COMPOSITE EXAMPLE

40 SET STP	2 SET AUTO	1 A 2 A 5 RNGE 1 A 2 A 20 RNGE	0 A 0 A 3 AUTO
Set 4 Second Pause.	Do Two Scans or Prints.	Range from Item 5 Thru 20 in Block 1, Batch 2.	Step to and Scan or Print Every 3rd Item.

Auto Keys (continued)

AUTO SCANNING FROM THE MEMORY REGISTERS

PROCEDURES	KEYS	FUNCTIONS
To scan or print all frames identified in the Memory Registers:	MOD AUTO	Do one scan or print of all frames identified by number in the Memory Registers. Note: If a cartridge number is found during stepping, the film will rewind. At this point, load the new cartridge identified on the display. Auto Scanning or Auto Printing will continue automatically.

COMPOSITE EXAMPLE

40 SET STP	3 SET AUTO	5 RNGE 30 RNGE	MOD AUTO
Set 4 Second Pause.	Do Three Scans or Prints.	Range From Registers 5 Thru 30.	Step and Scan or Print (Stepping at Intervals is not Allowed.)

Memory Register/Autoscanning Autoprinting Exercise

As an illustration of the functions of the Memory Registers and Auto-Scanning and Auto-Printing, perform the following exercise, using a typical roll of film for Auto-Scanning and Auto-Printing. The procedure assumes the use of single-level blipped film (one blip size). If you wish, you may use any other type of blipped film. (The frame number keying sequences, however, will vary for different level films, as explained in the Search Sequence descriptions on page PS-36 and following.)

1. Set the Search Mode to 1, to use single-level blipped film (see page PS-2).
2. Load several Memory Registers, as follows:
 - Key in **1 SET STOR** (to access Memory Register 1).
 - Key in **5 CART STOR** (to store Cartridge Number 5 in Register 1).
 - Key in **6 STOR** (to store Frame Number 6 in Register 2).
 - Key in **8 STOR** (to store Frame Number 8 in Register 3).
 - Key in **5 L 2 SET AUTO** (to store a scan or print quantity value of 2 for the following frames).
 - Key in **10 STOR** (to store Frame Number 10 in Register 4).
 - Key in **12 STOR** (to store Frame Number 12 in Register 5).
3. The first five Memory Registers are now loaded with the following numbers, in order: Cartridge 5, Frame 6, Frame 8, Frame 10, and Frame 12. You can examine the contents of any register by accessing the register (**1 SET STOR**, for example), and then entering **MOD STOR**. Auto-Scan or Auto-Print from the loaded Registers as follows:
 - Enter **MOD AUTO** (to request scans or prints of all frames stored in the Memory Registers). The film will rewind and **CART 5** will display. This is a request for you to load Cartridge 5 in the machine.
 - Load a single-level cartridge. (For the purpose of this exercise, any cartridge number will do.) The Auto-Scan or Auto-Print sequence will step the film to Frames 6, 8, 10, and 12, in turn. The machine will do one scan or print of Frames 6 and 8, and two scans or prints of Frames 10 and 12.

CHECK ROUTINES PERFORMED FROM THE KEYBOARD

CHECK	KEYING PROCEDURE	FOR FURTHER DETAILS, SEE:
To check the current machine mode:	Press MOD . (The number of the current mode will display.	Page PS-2.
To change the current machine mode:	1. Press RUN to rewind the film. 2. Press CLR . 3. Enter the number (1 through 18) of the desired mode. 4. Press MOD .	Page PS-2.

Summary of Key Functions and Command Key Sequences

ALPHABETIC INDEX TO KEYING FUNCTIONS

KEYING SEQUENCE	FUNCTION
A	Serves as a "delimiter" between Block, Batch, and Item numbers in multi-blip search entries.
L A	Send Message A to the host computer.
AUTO	Step from frame to frame, and scan or print each frame.
B AUTO	Resume an interrupted Auto-Scan or Auto-Print sequence.
MOD AUTO	Step and scan or print, using data from the Memory Registers starting at the first register.
x AUTO	Step and scan or print frames at the intervals defined by the number x.
x SET AUTO	Used to set a temporary scan or print quantity value for use in Auto-Scanning or Auto-Printing. This value (x) will remain in effect until changed or until power is removed.
B	Used with other keys as defined below.
B AUTO	Restart an interrupted Auto-Scan or Auto-Print sequence from the stop point.
B PAGE SEARCH	Print or scan a complete Block or Batch of frames.
B RUN	Search again. The desired frame is in another location on film. (Used with film that contains Film Control Code.)
B SET	Used to request a new "stop" position for frames on the screen. (Operator must then position image using the 210 CAT Film Speed Control and press CLR.)
B STP	Restart an interrupted Step sequence from the stop point.
LB	Same as the B PAGE SEARCH function, except no actual scanning is done.
x B STOR	Specifies that the preceding frame number (x) is the starting point for a Batch Scan or Batch Print request.

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
CART	Display the next cartridge number stored in the Memory Registers.
L CART	Print a list of the cartridge numbers that have been downloaded.
x CART STOR	Store a number x in the currently accessed Memory Register as a cartridge number.
CLR	Stop any current machine automatic function. Clear the display.
CLR RNGE	Clear the current Step, Auto-Scan or Auto-Print range value from memory.
CLR STOR	Clear all stored data from the Memory Registers, and access Register 1.
FRM	Display the next value stored in a Memory Register.
FRM RUN	Display the next frame number stored in a Memory Register. Then search to it.
L FRM	Print or scan cartridge and frame numbers after a download from the host computer.
x FRM STOR	Same as x STOR (described below under STOR).
INC/DEC	Increment the Memory Register. Then display the number of the accessed register, the contents, and the number of scans or prints.
MOD INC/DEC	Decrement the Memory Register. Then display the number of the accessed register, the contents, and the number of scans or prints.

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
L	Used with other keys as defined below.
L A	Send Message A to the host computer.
L B	Send Message B to the host computer.
L CART	Print a list of the cartridge numbers that have been downloaded.
L FRM	Print cartridge and frame numbers after a download.
L -	If the host computer requests status of the Serial Communications Receiver, send a "Disabled" (not ready to receive) message. (3M Enhanced Download Mode only. See page PS-47.)
L +	If the host computer requests status of the Serial Communications Receiver, send an "enabled" (ready to receive) message. (3M Enhanced Download Mode only. See page PS-47.)
L RSET	Reset the Serial Communications Receiver.
xxxx L	Load and run the diagnostic specified by number xxxx.
-	Back up the film one frame.
L -	If the host computer requests status of the Serial Communications Receiver, send a "disabled" (not ready to receive) message. (3M Enhanced Download Mode only. See page PS-47.)
x -	Subtract the frame number x from the currently displayed number, and search to the difference.

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
MOD	Display the current machine operating mode (1-18).
MOD AUTO	Step and scan or print, using data from the Memory Registers.
MOD INC/DEC	Decrement the Memory Register. Then display the number of the accessed register, the contents, and the number of scans or prints.
MOD RNGE	Display the range values currently stored in the Memory Registers.
MOD RUN	Retrieve the frame displayed just previously to the current frame.
MOD STP	Step film to the frames identified in the Memory Registers.
MOD STOR	Display the number of the currently accessed Memory Register, the contents, and the number of scans or prints.
x MOD	Change the current page search mode to the number specified by x.
+	Advance the film one frame.
L +	If the host computer requests status of the Serial Communications Receiver, send an "enabled" (ready to receive) message. (3M Enhanced Download Mode only. See page PS-47.)
x +	Add the frame number x to the currently displayed number, and search to the sum of the numbers.

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
RNGE	Used with other keys as defined below.
CLR RNGE	Clear the current Step or Auto-Function range value from memory.
MOD RNGE	Display the range values currently stored in the Memory Registers.
x RNGE y RNGE	Store the frame values defined by x and y in the Memory Registers.
RSET	Used with other keys as defined below.
L RSET	Reset the Serial Communications Receiver. (Applies to 3M Download or 3M Enhanced Download Mode of operation only. See "Operating in a Computer Communications Setup", page PS-46.)
x RSET	Set the Display to the value defined by x.
x RSET STOR	Set the currently accessed Memory Register to the value defined by x.
RUN	Rewind film.
B RUN	Search again. The desired frame is in another location on film.
FRM RUN	Display the next frame number stored in a Memory Register. Then search to it.
MOD RUN	Retrieve the frame displayed just previously to the current frame.
x RUN	Search on film to the frame defined by x.

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
SET	Used with other keys as defined below.
B SET	Used to request a new "stop" position for frames on the screen. (Operator must then position image with 210 CAT Manual Film Scan Control, and press CLR.)
x SET AUTO	Used to set a temporary print quantity value. This value, defined by x , will remain in effect until changed or until power is removed.
x SET STP	Set a pause time (1/10th of x) for each stop during a step sequence.
x SET STOR	Access the Memory Register specified by the number x .
STP	Step film from frame to frame, starting from the current film position.
B STP	Restart an interrupted step sequence from the stop point.
MOD STP	Step film to the frames identified in the Memory Registers.
x SET STP	Set a pause time (1/10th of x) for each stop during a step sequence.
x STP	Step film at the frame intervals defined by the number x .

Summary of Key Functions and Command Key Sequences (continued)

KEYING SEQUENCE	FUNCTION
STOR	Used with other keys as described below.
CLR STOR	Clear all stored data from the Memory Registers, and access Register 1.
MOD STOR	Display the number of the currently accessed Memory Register, the contents, and the print or scan quantity.
x B STOR	Specifies that the preceding frame number (x) is the starting point for a Batch print/scan request.
x CART STOR	Store number x in the currently accessed Memory Register as a cartridge number.
x FRM STOR	Same as x STOR (described below).
x RSET STOR	Set the currently accessed Memory Register to the value defined by x.
x SET STOR	Access the Memory Register defined by the number x.
x STOR	Store the frame number x in the currently accessed Memory Register.

Search Modes

Modes 1, 2, 3, and 4 (Films with One Blip Size)

MODE	DIFFERENCES	FWD — REV	CHARACTERISTICS
1	<ul style="list-style-type: none"> Blips in A row only. 		<p>For all modes:</p> <ul style="list-style-type: none"> The machine does not recognize blip size differences. That is, all blips are counted as item blips. <p>For Mode 1 only:</p> <ul style="list-style-type: none"> Blips are counted in the A row in ascending order as film moves forward. The home row is A
2	<ul style="list-style-type: none"> Blips in A and B rows. Turn the Film Traverse Control clockwise to move into the A Blip Row or counterclockwise to move into the B Blip Row. 		<p>For Modes 2 and 3 only:</p> <ul style="list-style-type: none"> Blips are counted in the A row in ascending order as film moves forward. Blips are counted in the B row in ascending order as film moves in reverse. The home row is A.
3	Same as Mode 2, 17, and 18.		
4	<ul style="list-style-type: none"> Blips in B row only. 		<p>For Mode 4 only:</p> <ul style="list-style-type: none"> Blips are counted in the B row in ascending order as film moves forward. The home row is B

HOW TO SEARCH:

- To initiate search to an Item on film:
 - Enter the Item number at the Keyboard.
 - Press **RUN**.
- The machine will search to the requested frame and stop. If the **end of film** is reached before the desired frame is found:
 - In Modes 1 and 4: The film will stop at the end of film. The following message will display, indicating that the requested frame has not been found:
 - In Modes 2 and 3: Film will rewind into the cartridge after both the A and B rows have been searched and the desired frame is not found.

Example: Item 100
100

END OF FILM
CHECK INDEX

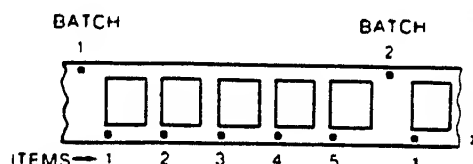
Mode 5 (Batch B-A Blipped Films)

MODE

FWD → REV

CHARACTERISTICS

- 5 • Blips in A and B rows.



- The machine does not recognize blip size differences.
- To locate a particular frame. B row blips are counted as Batch blips until the desired Batch is located. Then A row blips are counted as Items until the requested frame is retrieved.
- Blips are counted in both rows (one row at a time) in **ascending** order as film moves **forward**.
- No home row. (The machine senses both rows simultaneously).

HOW TO SEARCH:

- To initiate search to an Item within a Batch:
 - Enter the Batch number at the Keyboard and press **A**.
 - Enter the Item number:
 - Press **RUN**.
- To initiate search to a Batch header:
 - Enter the Batch number:
 - Press **RUN**.
- The machine will search to the requested frame and stop. If the **end of film** is reached before the desired frame is found, the following message will display:

Example: Batch 25, Item 291
 25 0
 25 291

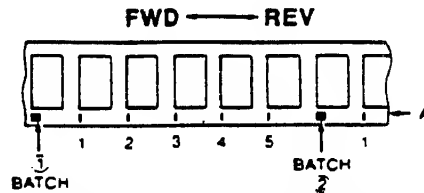
Example: Batch 25
 25 0

**END OF FILM
CHECK INDEX**

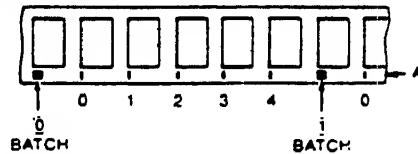
Modes 6, 7, 8, and 9 (Films with Two Blip Sizes)

MODE DIFFERENCES

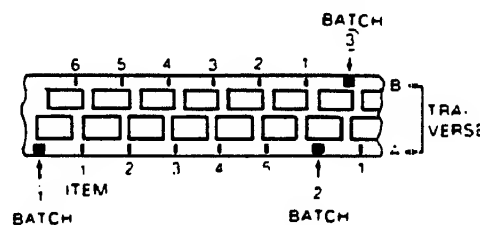
- 6
- Blips in A row only.
 - Batch and Item blips begin with 1.



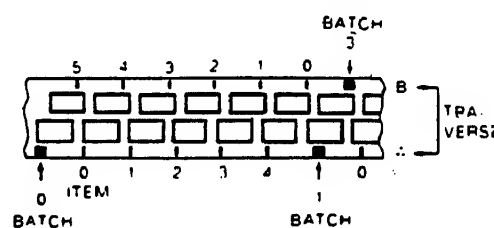
- 7
- Same as Mode 6, except:
- Batch and Item blips begin with 0.



- 8
- Blips in A and B rows.
 - Turn the Film Traverse Control clockwise to move into the A Blip Row or counterclockwise to move into the B Blip Row.
 - Batch and Item blips begin with 1.



- 9
- Same as Mode 8, except:
- Batch and Item blips begin with 0.



CHARACTERISTICS

For all modes:

- The machine recognizes two blip sizes: **Batch** (medium) and **Item** (small). To locate a particular frame, medium size blips are counted first to locate a Batch. Then small blips within the Batch are counted to locate the frame.

- The home row is A.

- Blips are counted in the A row in **ascending** order as film moves forward.

For Modes 8 and 9 only:

Blips are counted in the B row in **ascending** order as film moves in **reverse**.

HOW TO SEARCH:

- To initiate search to an Item within a Batch;
 - Enter the Batch number at the Keyboard, and press A.
 - Enter the Item number:
 - Press RUN.
- To initiate search to a Batch header:
 - Enter the Batch number.
 - Press RUN.
- The machine will search to the requested frame and stop. If the **end of film** is reached before the desired frame is found:
 - In Modes 6 and 7: The film will stop at the end of the film. The following message will display:
 - In Modes 8 and 9: Film will rewind into the cartridge after both the A and B rows have been searched and the desired frame is not found.

Example: Batch 8, Item 471
 8 0
 8 471

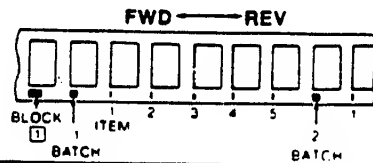
Example: Batch 8
 8 0

END OF FILM
 CHECK INDEX

Modes 10, 11, 12, and 13 (Films with Three Blip Sizes)

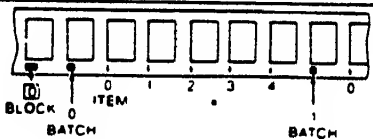
MODE DIFFERENCES

- 10
- Blips in A row only.
 - Block, batch, and item blips begin with 1.



- 11 Same as Mode 10. except:

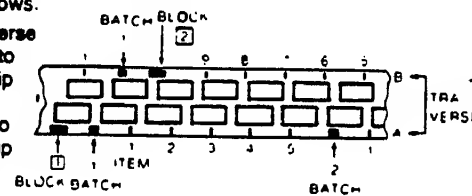
- Block, Batch, and Item blips begin with 0.



- 12
- Blips in A and B rows.

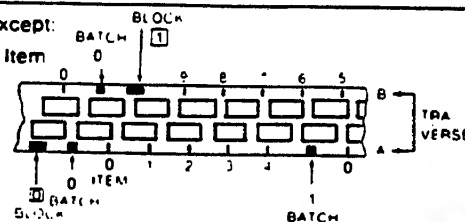
- Turn the Film Traverse Control clockwise to move into the A Blip Row or counterclockwise to move into the B Blip Row.

- Block, batch, and item blips begin with 1.



- 13 Same as Mode 12. except:

- Block, Batch, and Item blips begin with 0.



CHARACTERISTICS

For all modes:

- The machine recognizes three blip sizes: Block (large), Batch (medium) and Item (small). To locate a particular frame: Large blips are counted first to locate a Block. Then medium blips are counted within the Block to locate the desired Batch. Finally Item blips are counted within the Batch to locate the desired frame.

- The home row is A.

- Blips are counted in the A row in ascending order as film moves forward.

For Modes 12 and 13 only:

Blips are counted in the B row in ascending order as film moves in reverse.

- To initiate search to a particular Item:
 - Enter the Block number at the Keyboard, and press A.
 - Enter the Batch number and press A.
 - Enter the Item number.
 - Press RUN.

Example: Block 5, Batch 42, Item 215

5	0	0
5	42	0
5	42	215

- To initiate search to a Batch header:
 - Enter the Block number, and press A.
 - Enter the Batch number.
 - Press RUN.

Example: Block 5, Batch 42

5	0	0
5	42	0

- To initiate search to a Block header:
 - Enter the Block number.
 - Press RUN.

Example: Block 5

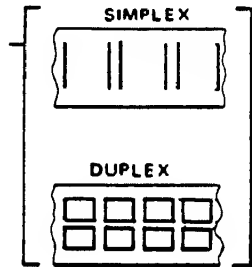
5	0	0
---	---	---

- The machine will search to the requested frame and stop. If the end of film is reached before the desired frame is found:
 - In Modes 10 and 11: The film will stop at the end of film. The following message will display:
 - In Modes 12 and 13: Film will rewind into the cartridge after both the A and B rows have been searched and the desired frame is not found.

END OF FILM
CHECK INDEX

Mode 14 (Odometer Mode for Films with no Blips)**MODE**

- 14 • No blips.

**HOW TO SEARCH:**

- To initiate search to a particular area on the film:
 - Enter a number at the Keyboard. For example:
 - Press RUN.

Note

For a 100 foot roll of film, an entry of 1200 will cause the film to drive to about the middle of the roll.

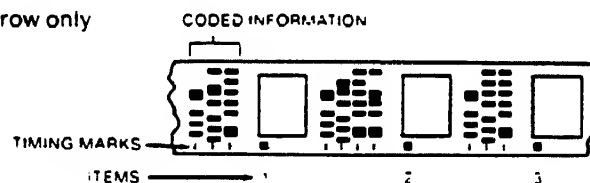
- The film will drive to the area on film represented by the entered number, then stop. If the end of film is reached before the odometer counts to the entered number, the following code will display:

1200

**END OF FILM
CHECK INDEX**

Mode 15 (Miracode Film)**MODE**

- 15 • Blips in A row only

**CHARACTERISTICS**

- Blips are counted in the A row in **ascending** order as film moves **forward**.
- Timing marks are sensed, but not counted as blips
- Coded information on film is not read
- The home row is A

HOW TO SEARCH:

- To initiate search to an Item on film:
 - Enter the Item number at the Keyboard.
 - Press RUN.

**Example: Item 100
100**

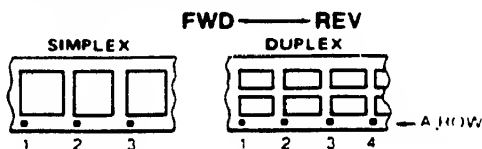
- The machine will search to the requested frame and stop. If the end of film is reached before the desired frame is found, the following message will display:

**END OF FILM
CHECK INDEX**

Mode 16, 17, and 18 (Films with One Blip Size)

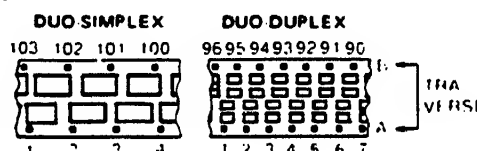
MODE DIFFERENCES

- 16 • Blips in A row only.



- 17 Same as Mode 2, 3, and 8 except:

- Blips in A and B rows.
- Turn the Film Traverse Control clockwise to move into the A Blip Row or counterclockwise to move into the B Blip Row.



- 18 Same as Mode 2, 3, and 17.

- Has capability of automatic **slow speed search to one or two frames** from current frame.

CHARACTERISTICS

For all modes:

- The machine does not recognize blip size differences. That is, all blips are counted as Item blips. Modes 16, 17, and 18 are functionally identical to modes 1, 2, and 3, respectively, except as

For Mode 16 only:

- Blips are counted in the A row in **ascending** order as film moves forward.
- The home row is A.

For Modes 17 and 18 only:

- Blips are counted in the A row in **ascending** order as film moves forward.
- Blips are counted in the B row in **ascending** order as film moves in reverse.
- The home row is A.

HOW TO SEARCH:

- To initiate search to an Item on film:
 - Enter the Item number at the Keyboard.
 - Press **RUN**.
- The machine will search to the requested frame and stop. If the end of film is reached before the desired frame is found:
 - In Mode 16: The following message will display, indicating that the requested frame has not been found:
 - In Modes 17 and 18: The film will rewind and the same message will display as for Mode 16.

Example: Item 100
100

END OF FILM
CHECK INDEX

Reading Film Control Codes

The 7710 Reader-Scanner can locate images by reading the following types of Film Control Code:

- Image Management Code (IMC)
- 3M Film Control Code

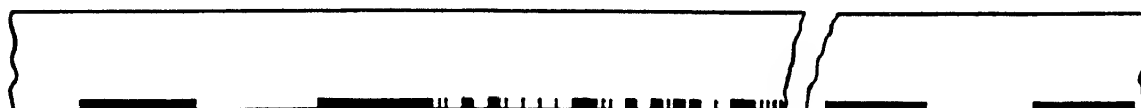


Image Management Code



These codes are "bar-like" (or "blip-like") marks, placed in the blip channel of the film by the camera. The codes provide information about the film that can be used by the Reader-Scanner to automate search.

Leader Code

Both types of Film Control Code use data placed at the leader end of the film to provide primarily the following information:

1. **Camera Blip Mode**--This mode number (which may differ from the search mode number used by the Reader-Scanner) is translated by the Page Search software to automatically set up the appropriate Reader-Scanner search mode (1 to 18). If the Reader-Scanner does not recognize the camera mode, it displays Code 221. When this occurs:
 - Press **CLR** to remove the display code.
 - Examine the blip pattern on the film. Then review Search Modes, pages PS-36 through PS-41, to determine the appropriate page search mode.
 - Press the **MOD** Key to check the current page search mode. If it is not correct for the film, change the mode as instructed on page PS-2. If it is correct, proceed with the search.

Note

Your 3M Service Technician can set parameters in the page search software to suppress generation and display of Code 221 and Code 220 (described in tabbed section "DISPLAY CODES AND TROUBLESHOOTING", page DT-10), if you wish.

Reading Film Control Codes (continued)

2. **Roll Number**--The Page Search reads the roll number in the Film Control Code, but acts on it only if the Reader-Scanner is connected in a host computer setup, and has received a roll number in a "download" from the host computer. (See pages PS-46 through PS-51 for a description of a host computer setup.) In this case, if the two roll numbers disagree, the Reader-Scanner will rewind the film and display Code 220. When this occurs:
 - Press **CLR** to remove the display code.
 - If you know the current roll of film is the roll you wish to search on, simply reinsert the cartridge and proceed with the search.
3. **Starting Image Address**--The Page Search uses this address to set its blip counters to the appropriate address for the first blip on film. This is necessary if the film starts with an image identified with anything but 1 (or 0).

Error Correction Code

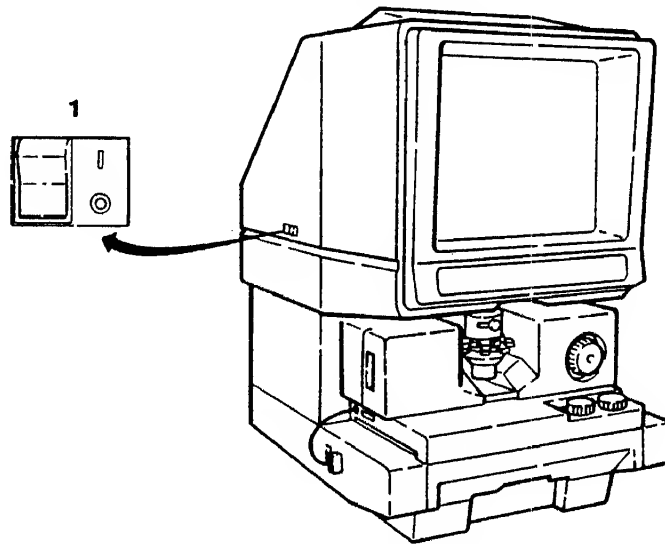
3M Film Control Code uses error correction code, in addition to leader code. Error correction code can be placed anywhere on film to reset the blip count to the appropriate number if camera problems require re-filming of images. (The format of the correction code is almost identical to the format of the leader code.) Re-filming and the consequent use of correction code may occasionally cause search problems that result in the Reader-Scanner displaying the message CHECK FOR INDEX ERROR. When this occurs:

- Press **CLR** to remove the display message.
- If you believe that the desired image is elsewhere on the film, simply enter **B RUN** at the keyboard. (The search will continue.)

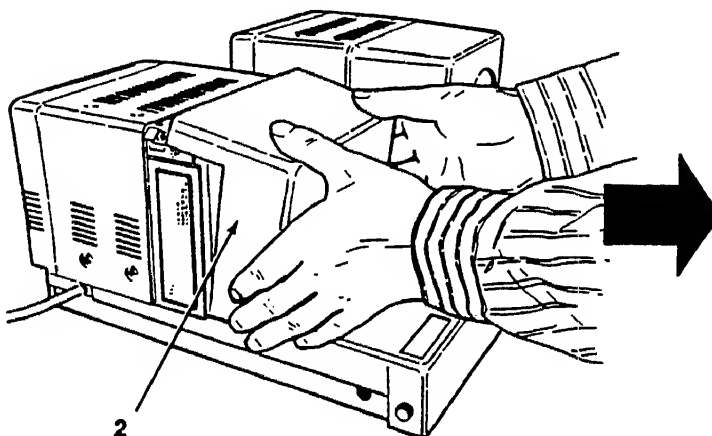
Cleaning the Filter Glass and Plastic Window

If miscounting during page search occurs:

1. Push the Reader-Scanner Power Switch (1) to the "0" (OFF) position.

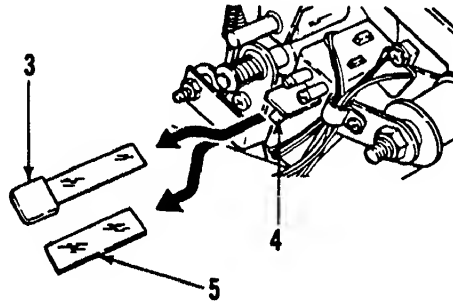


2. Remove the Left Front Cover (2) of the Film Transport by grasping the cover with both hands and pulling it straight out.



Cleaning the Filter Glass and Plastic Window (continued)

3. Grasp the blue handle of the Plastic Window (3) and pull straight out.



4. While pushing the Release Lever (4) down, grasp the green Filter Glass (5) by the edges and pull straight out.
5. Wipe clean the Plastic Window and Filter Glass with a soft, clean, lint-free cloth. If material is stuck to the surface, moisten the cloth with glass cleaner.

CAUTION

Do not leave fingerprints on the surface of the Plastic Window or Filter Glass.

6. Reinstall the Filter Glass (bottom slot), Plastic Window (upper slot) and Left Front Cover.

Operating in a Computer Communications Setup

Introduction

The functions described below apply only to machines that are connected with an external host Computer and Display Terminal via a communications line. These machines are equipped with Communications Kits that allow them to be controlled by the Host Computer. The kits can be either of two kinds: an Asynchronous Protocol Interface (API) or Biphase Protocol Interface (BPI). The systems can operate in four communications modes:

- **3M Direct Search** - In this mode, sometimes called the Micrapoint mode, searching on microfilm is automatically controlled by the Host Computer. The operator does not use the Reader-Scanner Keyboard for searching, but is required to load cartridges for searching on request from the Host Computer.
- **3M Download** - In this mode, the Host Computer downloads (transfers) a sequence of microfilm cartridge and frame numbers (along with print routing addresses) into Download Registers in the 7756 Page Search. Up to 750 Download Registers are available. The operator can subsequently use the Step, Auto-Scan, and Auto-Print functions to retrieve the identified images from microfilm and scan or print them. If a remote printer is included in the communications setup, print routing addresses can be printed and attached to the documents for mailing purposes.
- **3M Enhanced Download** - This mode combines the capabilities of the 3M Download and Direct Search. The Host Computer can transfer microfilm cartridge and frame numbers into the Reader-Scanner Download Registers, and in addition can automatically control search routines. This mode also has the capabilities of two-way messaging. The Reader-Scanner can send status messages to the host Computer when requested by the host. It can also send preprogrammed messages via the Read-Scanner Page Search Keyboard.
- **CAR Mode** - In CAR (Computer Aided Retrieval) Mode, the Host Computer can control either automatic download or direct search routines. However, this mode does not include some of the features of the three modes previously described. For example, it can use only 99 of the 750 Download Registers available in the machine, unless special provisions are made in the Host Computer software, and it cannot supply print routing codes.

Note

For Auto-Printing, the 7710 Reader-Scanner must be in the Reader-Printer Mode. For Auto-Scanning (FAXing), the 7710 Reader-Scanner must be in the Reader-Scanner Mode and the Controller set to "Initiate On-Line" FAX from the Main Menu.

Preparing for Operation in a Communications Mode (if the On-Line FAX location does not have a Label Printer)

After power is applied to the system (see tabbed section "OPERATING SEQUENCE", page OS-2):

1. Make sure the Reader-Scanner is set to the correct page search mode (see page PS-2).
2. If your system includes a label printer, make sure power is applied to it and the printer is set on-line.
3. Log into the Host Computer system at the Display Terminal.

To Direct Search in any Mode

In Direct Search Modes, searching on microfilm is automatically controlled by the Host Computer. The operator is required to load microfilm cartridges from time to time, but no keying sequences are required at the Reader-Scanner Page Search Keyboard.

Performing a Download in 3M Enhanced Download Mode

1. Request a download from the system terminal.

Note

If an error occurs during download: Press **CLR L RSET** to reset the Page Search to accept further downloads.

2. When the download is completed, the message "**cccc0710**" (DOWNLOAD RECEIVED) will show on the Reader-Scanner Page Search Display. Press **CLR** to remove the message. If your system includes a label printer and you wish a download printout, disconnect the 7710 from the printer port 5A at the rear of the 7756 Page Search, connect the label printer to the printer port, then:
 - For a printout of all cartridge numbers stored in the Download Registers, press **L CART**. To terminate the printout, press **CLR**.
 - For a printout of all cartridge and frame numbers, and routing codes (if included), press **L FRM**. To terminate the printout, press **CLR**.
3. Reconnect the 7710 to the printer port and press **L CLR** to prepare for use of the keyboard search and print functions.
4. Highlight "Initiate On-Line FAX" (or "Transfer Images from 7710" if not DMS or WorkManager) at the Controller and press **Enter**. The Transfer Screen is displayed on the 7960 Monitor.
5. Use **MOD STP** to search or **MOD AUTO** to search and scan or search and print after the download (see next page). The Transfer Screen displays the activity as requests are initiated and completed. If routing codes are included with the download data, a Cover Sheet is created automatically.

Performing a Download in 3M Download Mode

1. Enter **CLR 8888 L 02 L**. (This enables the download.)
2. When the download is completed, the message "**cccc0710**" (DOWNLOAD RECEIVED) will show on the Reader-Scanner Page Search Display. Press **CLR** to remove the message. If your system includes a label printer and you wish a download printout, disconnect the 7710 from the printer port 5A at the rear of the 7756 Page Search, connect the label printer to the printer port, then:
 - For a printout of all cartridge numbers stored in the Download Registers, press **L CART**. To terminate the printout, press **CLR**.
 - For a printout of all cartridge and frame numbers, and routing codes (if included), press **L FRM**. To terminate the printout, press **CLR**.
3. Reconnect the 7710 to the printer port and press **L CLR** to prepare for use of the keyboard search and print functions.
4. Highlight "Initiate On-Line FAX" (or "Transfer Images from 7710" if not DMS or WorkManager) at the Controller and press **Enter**. The Transfer Screen is displayed on the 7960 Monitor.
5. Use **MOD STP** to search or **MOD AUTO** to search and scan or search and print after the download (see next page). The Transfer Screen displays the activity as requests are initiated and completed. If routing codes are included with the download data a Cover Sheet is created automatically.

Performing a Download in CAR Mode

1. Request the download at the System Terminal.

Note

If an error occurs during download: press **CLR**. Then key in **8888 L 04 L CLR** to reset the Page Search to receive further downloads.

2. Enter **CLR 8888 L 02 L**. (This enables the download.)
3. In this mode, a message is not used to indicate completion of a download. If your system includes a label printer and you wish a download printout, disconnect the 7710 from the printer port J5A at the rear of the 7756 Page Search, connect the label printer to the printer port, then:
 - For a printout of all cartridge numbers stored in the Download Registers, press **L CART**. To terminate the printout, press **CLR**.
 - For a printout of all cartridge and frame numbers, and routing codes (if included), press **L FRM**. To terminate the printout, press **CLR**.
4. Reconnect the 7710 to the printer port and press **L CLR** to prepare for use of the keyboard search and print functions.
5. Highlight "Initiate On-Line FAX" (or "Transfer Images from 7710" if not DMS or WorkManager) at the Controller and press **Enter**. The Transfer Screen is displayed on the 7960 Monitor.
6. Use **MOD STP** to search or **MOD AUTO** to search and scan or search and print after the download (see next page). The Transfer Screen displays the activity as requests are initiated and completed. If routing codes are included with the download data a Cover Sheet is created automatically.

Going to Direct Search Mode from 3M Download

If your system uses 3M Download as the default mode, but is on occasion required to "direct search" under computer control, enter Direct Search Mode when required as instructed below.

Note

The use of dual communications modes in the Page Search is valid only if the system service and programming parameters have been set up for it.

- To enter **3M Direct Search Mode**, key in: **CLR 8888 L 06 00 L CLR**
- To enter **CAR Mode**, key in: **CLR 8888 L 04 L 00 L CLR**

Stepping, Auto-Scanning, or Auto-Printing after a Download

To step film: **MOD STP =**

Step film to the frames identified by number in the Download Register:
Note: If a cartridge number is found during stepping, the film will rewind. At this point, load the cartridge identified on the Reader-Scanner Page Search Display. Stepping will continue automatically.

EXAMPLE COMMAND STRING

40 SET STP
↑
Set a 4 Second
Pause

1 RNGE 30 RNGE
↑
Range from
Register 1 Thru 30

MOD STP
↑
Step Film (Stepping at
Intervals is Not Allowed)

To Auto-Scan or Auto-Print:

MOD AUTO =

Scans all frames identified by number in the Download Registers. Note: If a cartridge number is found during stepping, the film will rewind. At this point, load the new cartridge identified on the Reader-Scanner Page Search Display. Auto-Scanning or Auto-Printing will continue automatically.

EXAMPLE COMMAND STRING

40 SET STP
↑
Set a 4 Second
Pause

5 RNGE 30 RNGE
↑
Range from
Registers 5
Thru 30

MOD AUTO
↑
Step and Scan or
Step and Print
(Stepping at Intervals)

Temporarily Interrupting Step or Auto-Scanning or Auto-Printing

If you desire to interrupt a long step or Auto-Scan or Auto-Print sequence to use the Reader-Scanner temporarily for another task:

1. Press **CLR** to stop the Step, Auto-Scan, or Auto-Print sequence.
2. Press **RUN** to rewind the film and eject the cartridge.
3. Perform the desired machine task.
4. After completing the task, re-load the cartridge used during the interrupted Step, Auto-Scan, or Auto-Print function.
5. Press **B STP** or **B AUTO** to resume the Step, Auto-Scan, or Auto-Print sequence at the point where it was interrupted.

Special Two-Way Messaging Functions

A 7710 Reader-Scanner system operating in the 3M Enhanced Download Mode can be set up for two-way communication between the Reader-Scanner and the Host Computer. With this capability, the Reader-Scanner can perform the following special functions:

1. When it is requested (polled) by the Host Computer, the Reader-Scanner will automatically send status messages to the Host Computer.
2. Two programmed messages, each containing a maximum of 30 characters, can be sent to the Host Computer via short keying sequences from the Reader-Scanner Page Search Keyboard. (The messages, designated A and B, can be programmed into memory with the assistance of the Service Technician.)
 - To send Programmed Message A: Press L A
 - To send Programmed Message B: Press L B
3. In addition, in systems with two-way messaging, the operator can use the Reader-Scanner Page Search Keyboard to indicate availability of a specified Reader-Scanner for downloading as follows:
 - To indicate to the Host Computer that the Reader-Scanner is ready for downloading: Key in L +
 - To indicate to the Host Computer that the Reader-Scanner is not ready for downloading: Key in L -

Communications Command Codes

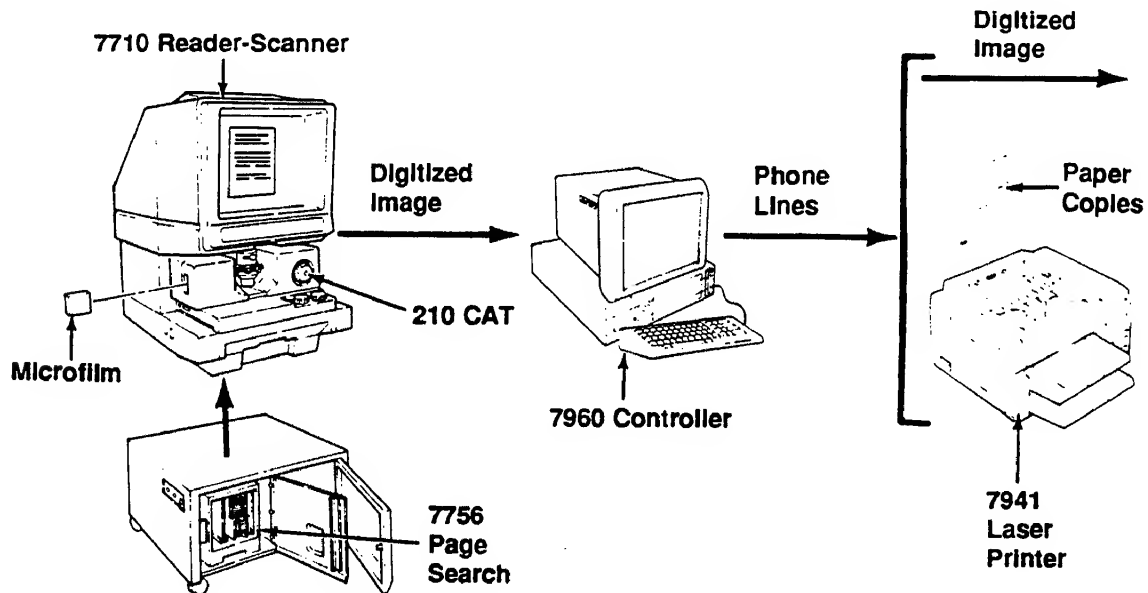
The table below summarizes functions of the communications command codes the operator can enter at the Reader-Scanner Page Search Keyboard.

To initiate a particular command function enter: **CLR 8888 L (2-digit code) L**

OPERATOR COMMAND CODES

CODES	FUNCTION
00	Return control from the Communications Interface to the Reader-Scanner.
01	Reset errors and the printer. Return Communications Interface to idle status.
02	Enables a 3M Download Mode operation. (The message "0710" (DOWNLOAD RECEIVED) displays when a download is completed.)
04	Enables CAR Mode operation. (Must be followed by code 00 to enable the Page Searcher to operate under control of its keyboard or the communications line.)
06	Enables a 3M Direct Search Mode operation. (Must be followed by code 00 to enable the Page Search to operate under control of its keyboard or the communications line.)
08	Return to 3M Enhanced Download Mode from Direct Search.

Typical 7710/API Application with Controller



Configuration

In a 7710/API application, the Reader-Scanner output is a direct FAX of the document packages to a selected remote location or locations via electronic transfer across standard telephone lines. A typical system application comprises a 7710, 210 CAT (Cartridge ANSI Transport), 7756 Page Search having an API (Asynchronous Protocol Interface) Kit installed, and a host computer having indexing software or downloading control software such as DMS. Page search control is done on the Reader-Scanner Page Search Keyboard and control of FAXing document images is done on the Controller Keyboard. Cover sheet control is done on the Host Computer but can be edited on the Controller Keyboard. A daisy chain of multiple 7710 Reader-Scanners is possible on the serial interface to the host computer. The desired destination is selected and all other reader/scanners ignore the download batch.

In a typical 7710/API application, the complete day's retrieval is loaded into the host computer. The host computer breaks the retrieval work into work units called "batches". A batch contains a list of cartridges and frame numbers of those cartridges to be located and printed or scanned. A frame number identifies a leading index document on the film which may or may not have other supporting documents filmed immediately after it on the roll. There are also other data fields included in the batch which aid in controlling the Reader-Scanner. The most significant field is the routing code, which is a free format text field of up to 250 characters which the customer can use for any messages to the operator of the Reader-Scanner. The most common usages of the routing code field is discussed in Workflow, page PS-52.

The operator of the reader/scanner enables the Page Search API Board of the targeted reader-scanner and instructs the host computer to download a batch to the selected reader-scanner. At the same time, the operator receives a list of cartridges, called a cartridge pick list, which contains the cartridges included in this download. The operator can then retrieve from the film library all the cartridges needed to complete the batch.

The operator can then instruct the reader/scanner to locate and scan all the frames and supporting documents within the download.

Workflow

The workflow described here is that of a specific high volume user, but it is not unlike other high volume users. The routing code used for this account contains specific information to aid in the retrieval process. The first field of the code contains the claim number of the document. This is used by the operator of the reader-scanner to verify the correct document has been located before printing. Other fields contain the destination of the document, its FAX number surrounded by "@" characters, the machine operator performing the work, etc. The specific workflow is as follows:

The operator first downloads a batch of retrievals onto the reader-scanner. The reader-scanner captures the routing code and uses it for internal processing and decision making. The operator uses the pick list to get the required cartridges from the film library. The operator specifies the desired delay time between the start of the routing code output for a frame and the start of the scan operation for that frame (specific key command **SET STP**). This gives the operator time to visually compare the claim number on the 7710 Scanner Display with the claim number about to be printed.

The operator next commands the page search for the specific reader-scanner to search and scan all downloaded requests (specific key command **MOD AUTO**).

The operator then initiates On-Line FAX.

The operator loads the specified cartridge each time a new cartridge is required.

After the page search has located a lead document, it delays the amount of time previously specified by the operator. While the delay is in effect, the operator visually inspects the document image displayed on the Viewing Screen of the reader-scanner to determine the proper exposure setting (gain and threshold). If the operator wants to change the exposure setting, the key sequence used to enter the menu for changing gain and threshold will automatically pause operations and resume after the new values have been entered. Other features such as masking and half-toning can also be incorporated at this time. If these features are not used, the exposure setting will be done automatically.

At the same time the operator is inspecting the quality of the document, the operator visually compares the document number on the 7710 Scanner Display with the document number displayed on the reader-scanner viewing screen. If there is a mismatch, the operator interrupts the automatic operation until the current document is found (specific key command **CLR**). The correct frame is then located manually. The operator resets the location count (specific key command {frame address} **RSET**). Automatic operations are then resumed with the **B AUTO** key sequence.

In the normal case where the document number and the 7710 Scanner Display agree, the reader-scanner is not interrupted and the lead document and supporting documents are scanned and FAXed. The host computer receives images from the reader-scanner as they become available. Each time a new document package is started, a new routing code is received and the previous images are packaged with a cover sheet and queued for FAX transmission.

The Controller places the routing information on the bottom of the Cover Sheet. It recognizes and dials the number surrounded by "@" characters and automatically FAXes them out.

The operator can verify image quality by stopping operations and printing a copy on the local 7940 Laser Printer.

Workflow (continued)

Under "ideal conditions", the 7710 operator merely observes functions as they occur and no operator input is required for the whole batch with the exception of inserting cartridges as requested. The one exception is when the last frame in the download is completed, the operator must manually enter a key stroke on the Reader-Scanner Keyboard to signal that the current document package is completed and can be assembled and transmitted.

Daily Throughput per FAX Line

With an average image size of 80,000 bytes, the average FAX time for an image is 90 seconds. The average time to send a cover sheet is 30 seconds. At 2.5 pages per FAX average plus a cover sheet, the weighted average for FAX transmission is:

$$\{(90 \times 2.5) + (30 \times 1)\} / 2.5 = 102 \text{ sec/page}$$

This translates into a transfer rate of 35 pages per hour over a single fully loaded FAX line (280 pages in an 8 hour period).

7756 Page Search Specifications

Module Dimensions	11-1/2 in. (29.21 cm) high 25-7/8 in. (65.72 cm) deep 15 in. (38.10 cm) wide
Shipping Dimensions	15-1/2 in. (39.37 cm) high 30-1/2 in. (77.47 cm) deep 19-3/4 in. (50.17 cm) wide
Module Weight	37 lb (16.79 kg)
Power Requirements	115 VAC/190 to 270 VAC, 1 A, 50/60 Hz
Power Consumption	150 watts average
Operating Environment	60°F to 80°F (15.6°C to 26.7°C), 10 to 80%RH
Storage Temperature	14°F to 122°F (-10°C to 50°C), 10 to 80%RH
Noise Level	42 dbA

7756 Page Search Options**API (Asynchronous Protocol Interface)
Communications Kit**

Communications Line Type	EIA RS232C Specification
External Connector Type	RS232C, Type D, 25 Pin
Transmission Rate	50 to 19,200 Baud
Character Code Set	ASCII
Operating Modes	3M Direct Search (Micrapoint) Mode 3M Download Mode 3M Enhanced Download Mode CAR Mode

**BPI (Biphase Protocol Interface)
Communications Kit**

Communications Line Type	Coax Type RG62AU
External Connector Type	Coax Type BNC for signal line
RS232C Type D, 25 Pin for Printer	
Transmission Rate	2.3587 megabits per second
Character Coding	Bi-phase Manchester II Encoding
Operating Modes	3M Download Mode CAR Mode 3M Enhanced Download Mode (without two-Way Messaging)

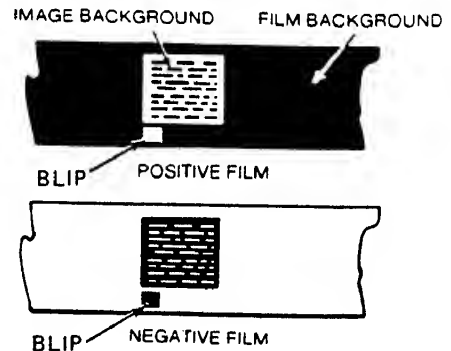
Agency Approvals

UL 114, Safety
TUV Rheinland
FCC 47CFR Part 15, RFI VDE

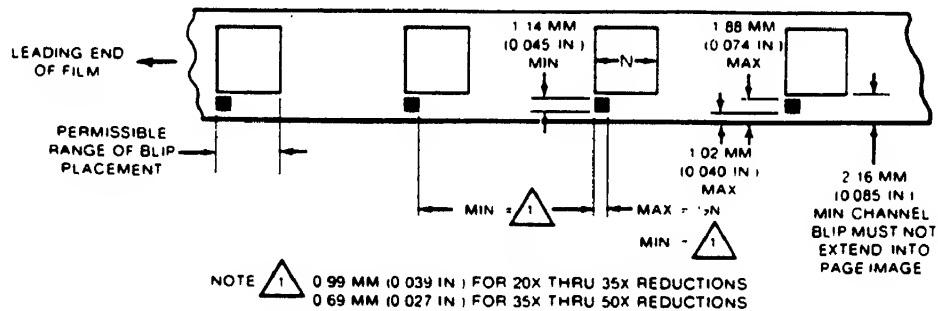
Blip Encoding Specifications

Blip Encoding can be either positive or negative:

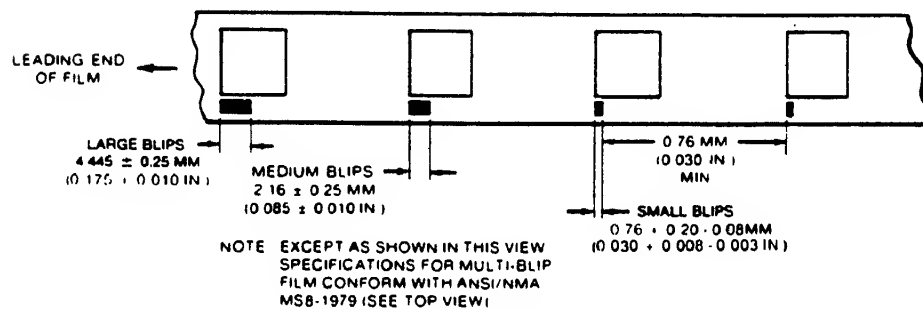
- On **positive** film, the background of the filmed image is clear and the image is dark. Normally the background of the film itself is dark. If it is, the blip must be clear.
- On **negative** film, the background of the filmed image is dark and the image is clear. Normally, the background of the film itself is clear. If it is, the blip must be dark.



The figures below show the requirement for size and placement of document blips on 16 mm film:



FILMS WITH BLIPS OF ONE SIZE (ANSI/NMA MS8-1979 STANDARD)



FILMS WITH MULTI-SIZE BLIPS

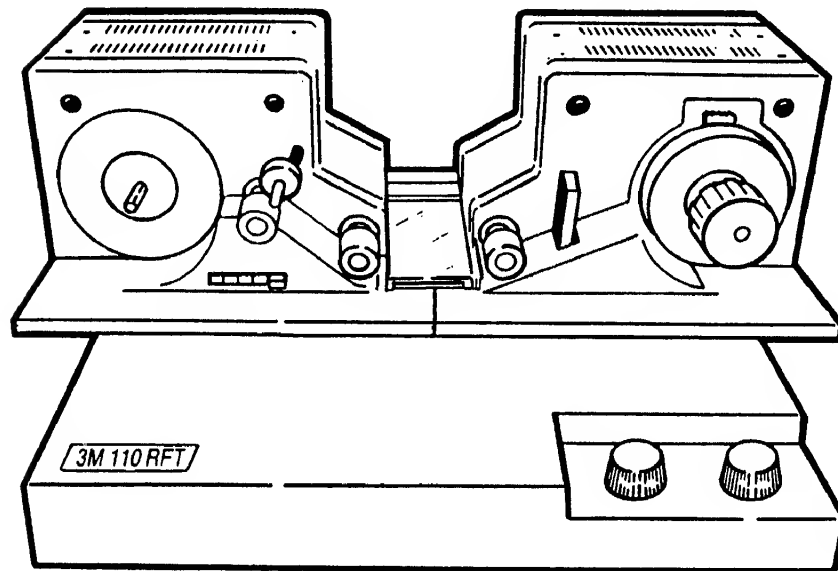
Blip and Film Density Specifications

FILM	MINIMUM DENSITY OF OPAQUE AREA	MAXIMUM DENSITY OF CLEAR AREA
Dry Silver	0.9	0.2
Silver Halide*	1.2	0.25
Diazo*	1.2	0.2
Vesicular**	1.5	0.25

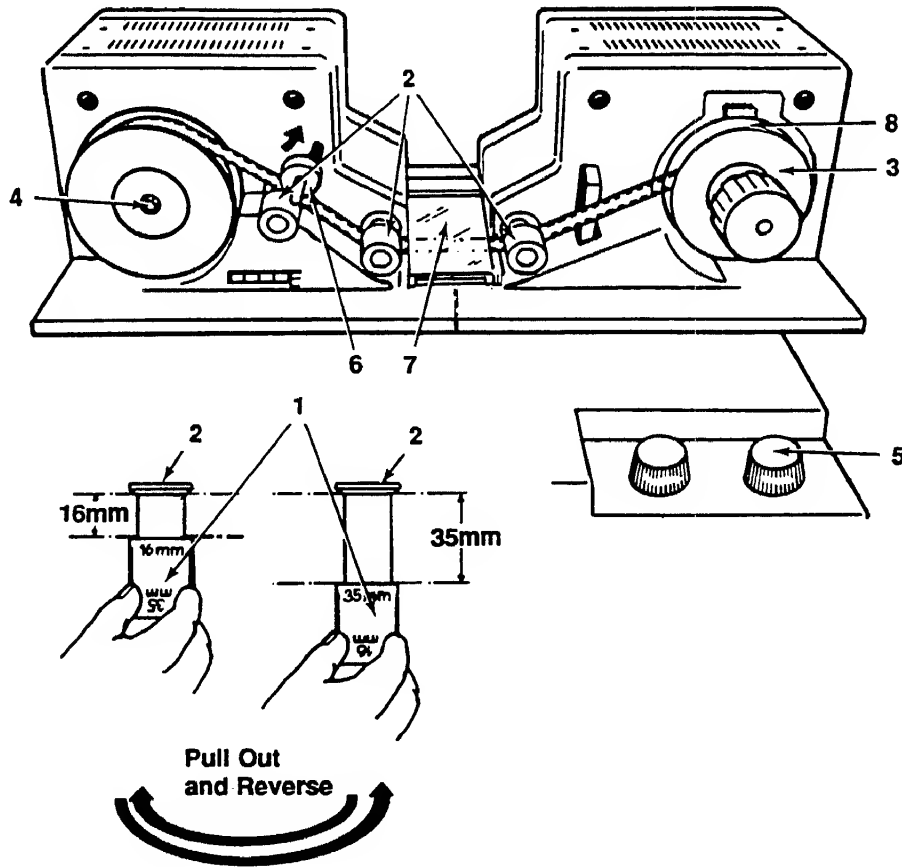
*Visual diffuse transmission density.
**Measured with a projection densitometer having an 1/4.5 optical system.

Table of Contents

Loading Film	RF-2
Locating an Image	RF-4
Cleaning the Glass Flats	RF-6
Removing the Film Transport	RF-7
Installing the Film Transport	RF-8
Specifications	RF-9

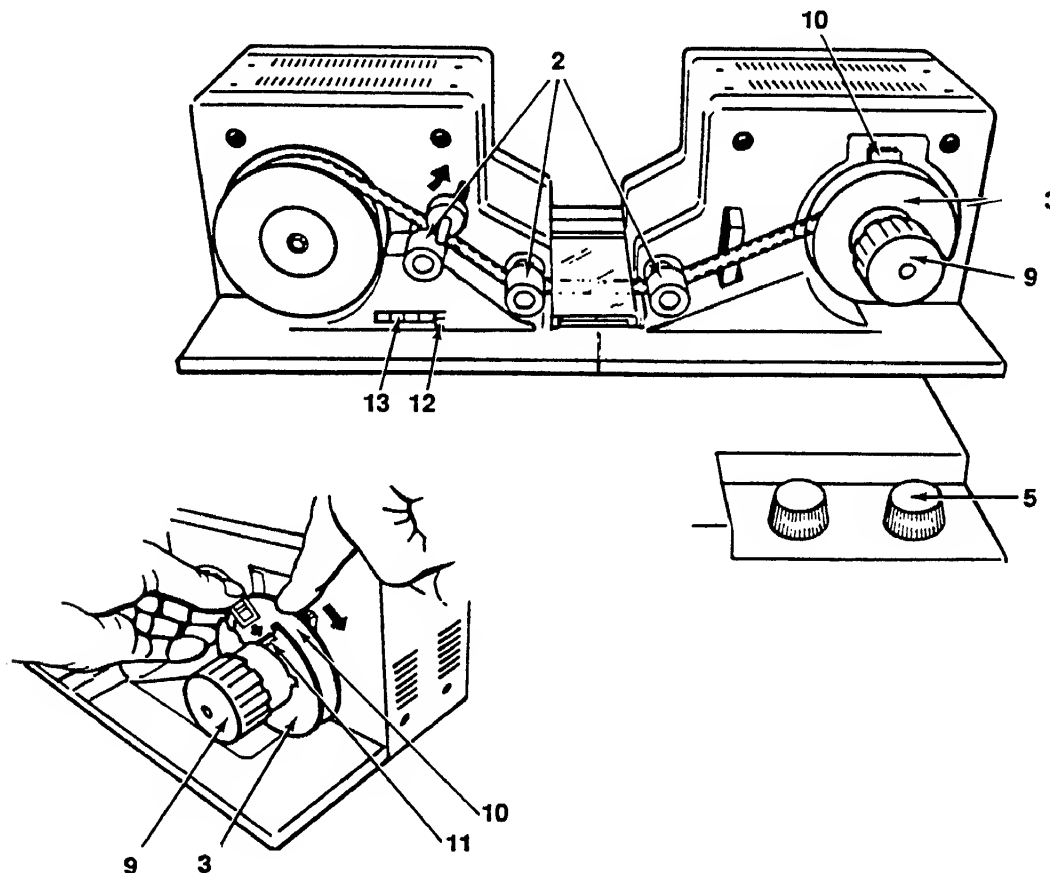


Loading Film

**Note**

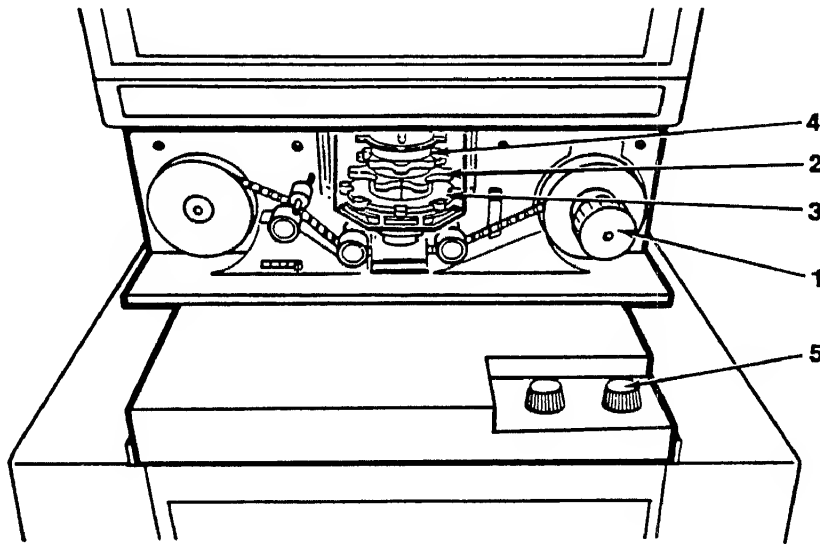
The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity. Press the **ENTER** Key on the 7710 Scanner Keyboard to light the Viewing Screen.

1. If changing film size from 16 mm to 35 mm or 35 mm to 16 mm, pull the Film Guide (1) off the three Film Guide Rollers (2), reverse the Film Guides and push them back on.
2. Pull out the Film Take-Up Disc (3).
3. Mount a reel of film onto the Film Spool Spindle (4). Be sure to push the reel all the way in up to the stop. Turn the reel slightly to engage the square spindle.
4. Turn the Film Speed Control (5) to the "0" position.
5. Lift the Film Idler (6) and thread the film within the three Film Guide Rollers (2), between the Glass Flats (7), past the Film End Switch (14), and up to the Film Take-Up Reel (8).

Loading Film (continued)

6. Turn the Manual Film Scan Control (9) so the Film Clamp (10) and Film Slot (11) are in a convenient (upward) position.
7. Move the Film Clamp (10) to the right and insert the film leader into the Film Slot (11).
8. Release the Film Clamp (10) and turn the Manual Film Scan Control (9) clockwise several turns to tighten the film.
9. Push in the Film Take-Up Disc (3) for 16 mm film.
10. Ensure the film is within the three Film Guide Rollers (2) and that the Film End Switch (14) is deflected.
11. Turn the Film Speed Control (5) slightly clockwise until the first frame is displayed on the Viewing Screen.
12. Push the Film Odometer Reset (12) for a 0000 display on the Film Odometer (13).

Locating an Image



Note

The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity. Press the **ENTER** Key on the 7710 Scanner Keyboard to light the Viewing Screen.

1. Turn the Manual Scan Control (1) clockwise to slowly advance film or counter-clockwise to slowly reverse film centering the image within the vertical fiducial marks on the Viewing Screen.
2. Turn the Film Traverse Control (6) to center the image within the horizontal fiducial marks on the Viewing Screen.
3. Turn the green colored Zoom Wheel (2) on the 7710 to display an image on the Viewing Screen as large as possible while remaining within the fiducial marks. If the film image cannot be adjusted to reach the fiducial marks, a Zoom Lens Assembly of a different magnification is needed (See tabbed section "READER-SCANNER", Changing the Zoom Lens Assembly, page RS-40).

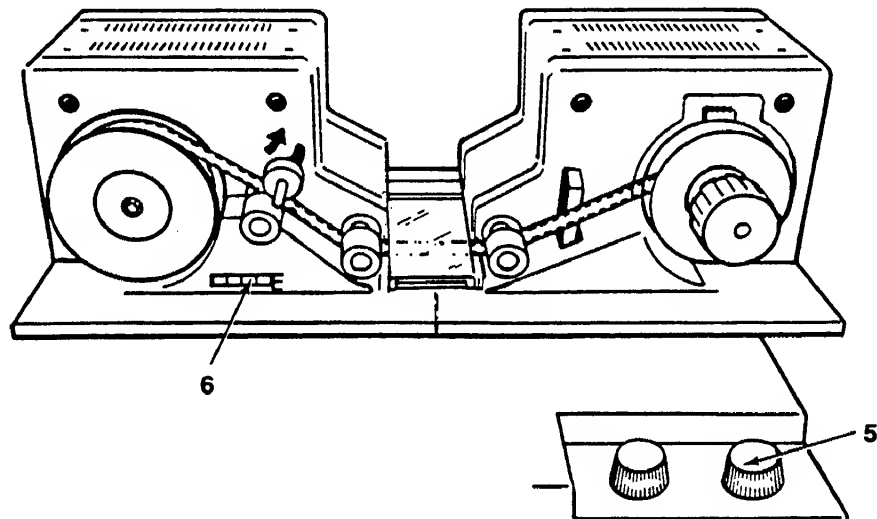
Note

Once a clear, sharp image has been focused, you should not have to refocus again even when changing magnification. At 6.5X to 14X, if there appears to be shadows in the corners of the Viewing Screen, move the Fresnel Lens Adjustment Handle to 6.5X to 14X.

4. Turn the Focus Wheel (3), if needed, to adjust for the sharpest screen image.
5. Turn the Image Rotation Wheel (4) to rotate the image if necessary.
6. Turn the Film Speed Control (5) slightly clockwise to scan film forward.

Note

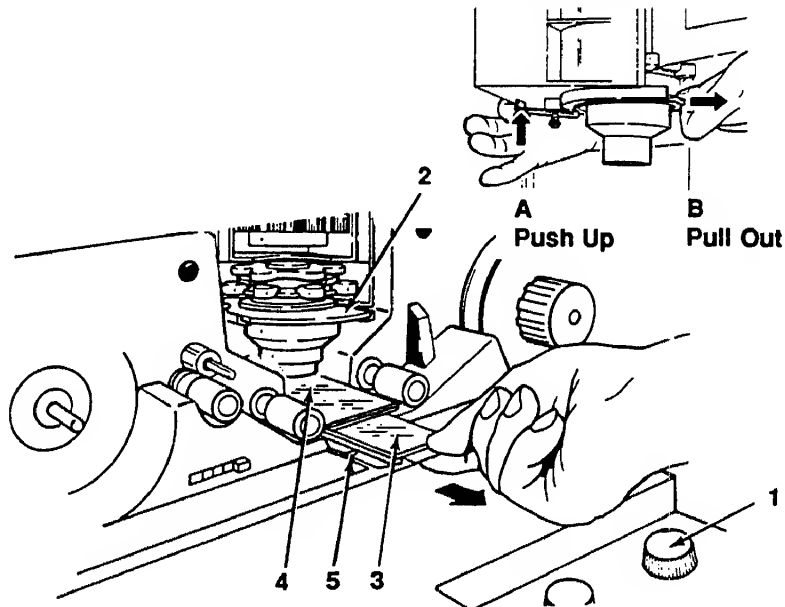
Always return the Film Speed Control (5) to the "0" position when the machine is not in use.

Locating an Image (continued)

7. Turn the Film Speed Control (5) fully clockwise to advance film quickly to a known Film Odometer (6) reading.
8. Turn the Film Speed Control (5) to the "0" position to stop the film.
9. Turn the Film Speed Control (5) slightly counter-clockwise to reverse the film scan.
10. Turn the Film Speed Control (5) fully counter-clockwise to reverse film quickly to a known Film Odometer (6) reading.
11. Turn the Film Speed Control (5) to the "0" position to stop the film.

Cleaning the Glass Flats**Note**

If a Lens Lock has been installed,
first push up on the lever.



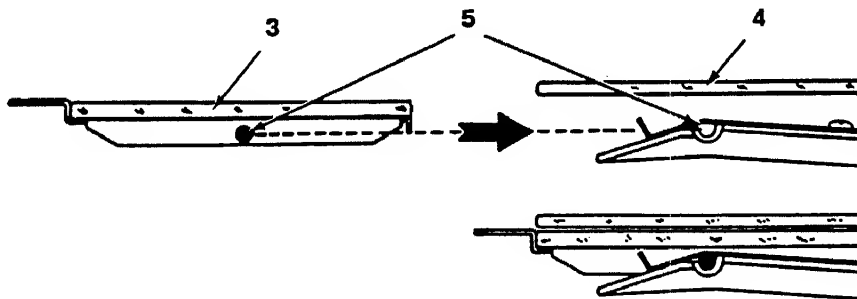
When images displayed on the Viewing Screen or prints appear spotted:

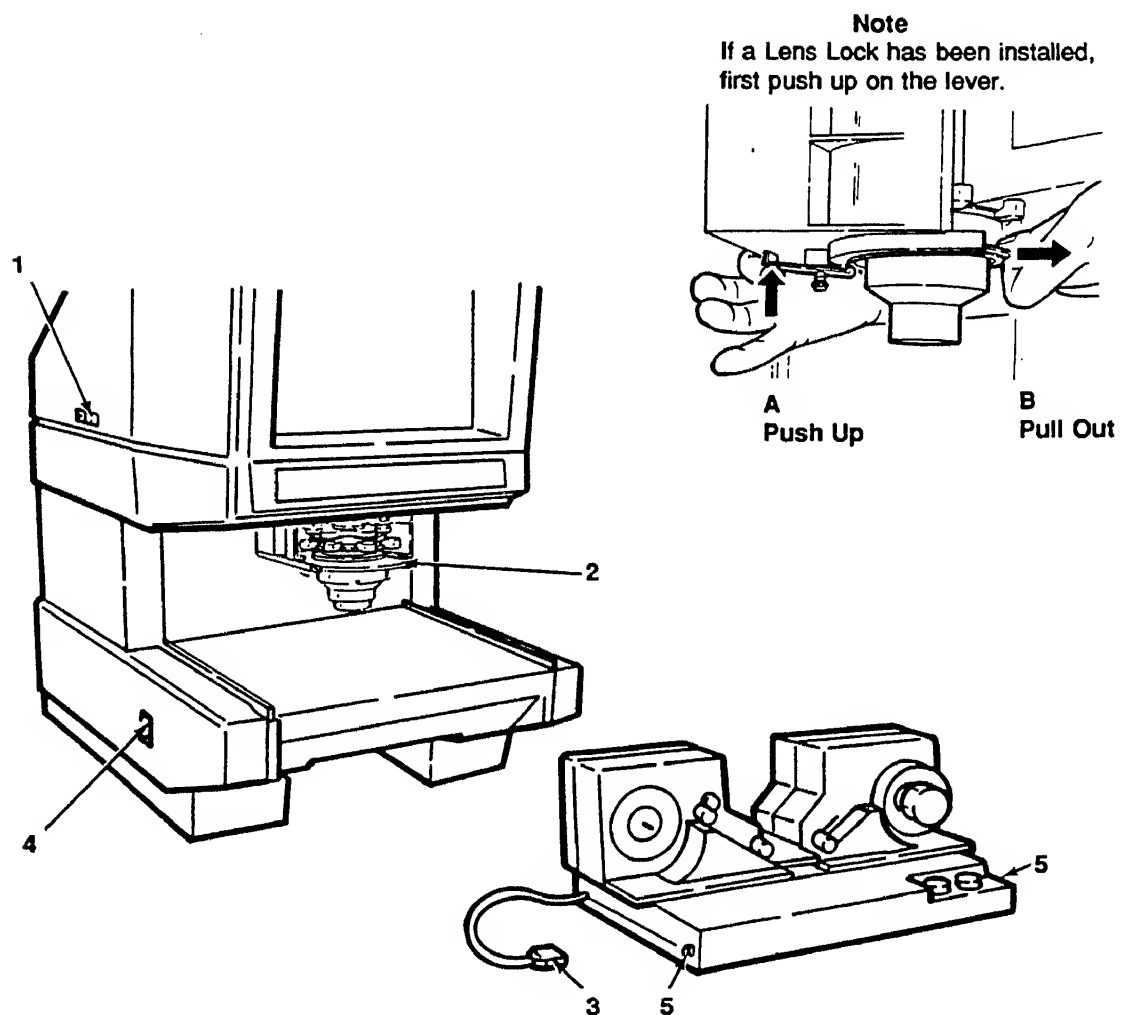
1. Remove film from the 110 RFT.
2. Turn the Film Speed Control (1) to the "0" position.
3. Remove the Zoom Lens Assembly (2) by pulling it straight towards you.
4. Remove the Lower Glass Flat (3) by pulling it straight towards you.
5. Clean both sides of the Lower Glass Flat (3) and the non-removable Upper Glass Flat (4) with any commercial lens cleaner and a soft, clean cloth or tissue.

Note

The blue side of the handle faces up.

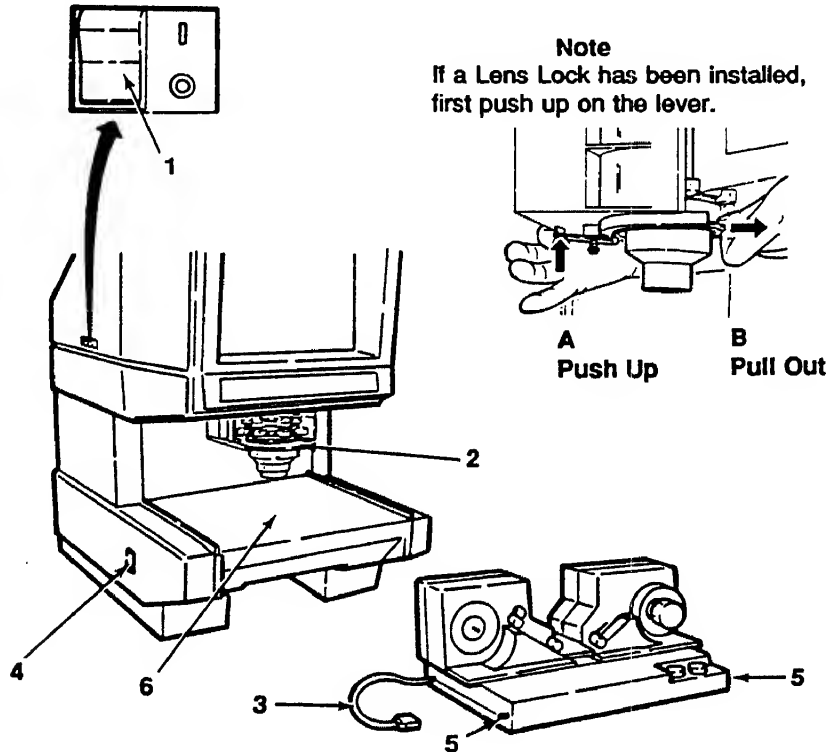
6. Reinstall the Lower Glass Flat (3) by positioning it beneath the Upper Glass Flat (4) and pushing straight back until both pins (5) engage.



Removing the Film Transport

When changing from viewing microfiche or cartridge film to 16 mm or 35 roll film:

1. Press the 7710 Power Switch (1) to the "0" (OFF) position.
2. Grasp the handle of the Zoom Lens Assembly (2) and pull it straight towards you.
3. Disconnect the System Cable (3) from the System Connector (4).
4. Depress the Transport Release Buttons (5) and pull the 110 RFT straight towards you.

Installing the Film Transport

When changing from viewing 16 mm or 35 mm roll film to microfiche or cartridge film:

1. Press the 7710 Power Switch (1) to the "0" (OFF) position.
2. Grasp the handle of the Zoom Lens Assembly (2) and pull it straight towards you.

Note

If a 210 CAT is being removed, disconnect the System Cable (3) from the System Connector (4).

3. Depress the Transport Release Buttons (5) and pull the 110 RFT straight towards you.
4. Place the 110 RFT on the Accessory Table Assembly (6).
5. Push the 110 RFT all the way back until the latches engage.
6. Plug the System Cable (3) into the System Connector (4).

Note

Avoid getting fingerprints on the surfaces of the glass lenses.

7. Reinstall the Zoom Lens Assembly (2) on the 7710.

Specifications***Machine Characteristics**

Machine Dimensions	
Height	6.9 in (175 mm)
Width	19.7 in (500 mm)
Depth	14.4 in (365 mm)
Shipping Dimensions	
Height	16.3 in (415 mm)
Width	25.6 in (650 mm)
Depth	22.0 in (560 mm)
Machine Weight	22 lb (10 kg)
Shipping Weight	24 lb (11 kg)
Agency Approvals	UL, CSA, VDE, and fulfills the requirements regarding interference according to Directive 82/499/ECC and DBP 1046/1984
Power Requirements	Supplied by Reader-Scanner: 27 VAC, 3.8 A, 50/60 Hz according to IEC 380 Sec. 2.2.18
Power Consumption	80 watts average
Film Capacity	16 mm and 35 mm width 2.5 mil to 5.7 mil thick 221 ft (67.5 m) length (2.5 mil) Diaz, Dry Diaz, Vesicular, Silver Halide
Film Speed	Positive or negative 10 ft/sec (3 m/sec) maximum 0.2 in/sec (4.5 mm/sec) minimum
Operating Environment	50°F to 86°F (10°C to 30°C), 20 to 80% RH
Storage Environment	14°F to 122°F (-10°C to 50°C), 10 to 80% RH
Noise Emission	70 dbA maximum

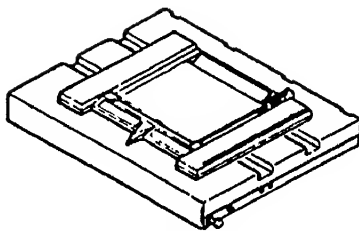
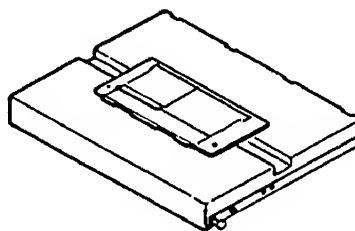
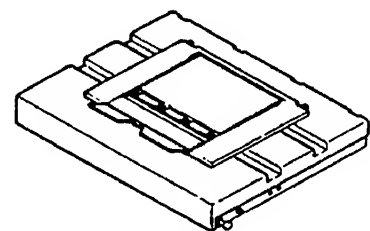
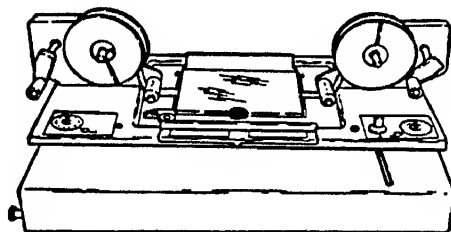
* All values are typical.

Agency Approval

UL 114, Safety
CSA C22, 2 No. 143, Safety
TUV 380, Safety
VDE 0871 "B", Safety

Table Of Contents

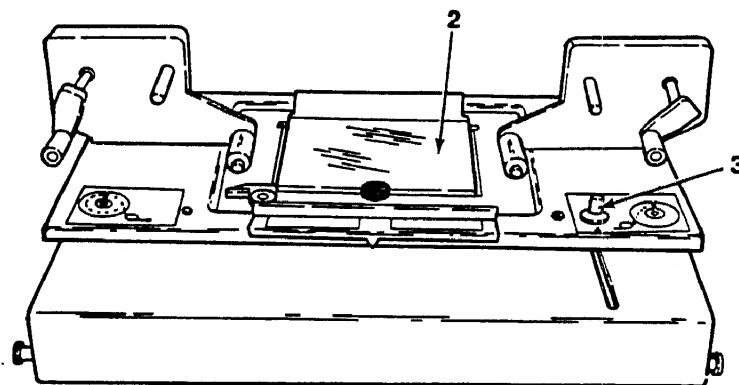
Locating an Image	FT-2
Fiche Handlers	FT-2
Roll Film Handler	FT-5
Cleaning the Glass Flats	FT-9
915 and 917 Single Fiche Handlers	FT-9
916 Dual Fiche Handler	FT-10
658 Single Fiche and Roll Film Handler	FT-11
Changing the Film Handlers	FT-12

**915****916****917****658**

Locating an Image

Fiche Handlers

Locating an image on microfiche on an 915, 916, 917, or 658 is essentially the same for all machines. The image is displayed on the Viewing Screen for reading or transferred to an 7960 Controller for printing locally on a 7940 Laser Printer or FAXing to a remote location. This instruction is limited to locating an image. For printing and scanning operations, see tabbed section "READER-SCANNER" and tabbed section "OPERATING INSTRUCTIONS".



Note

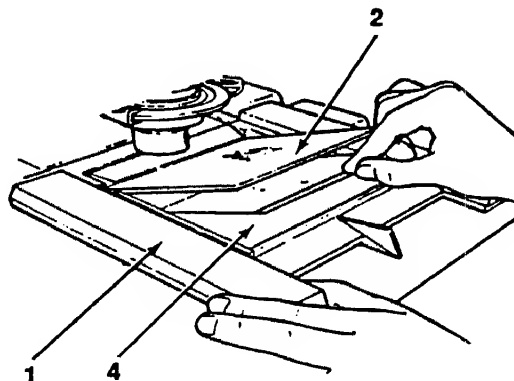
The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity. Press the **ENTER** Key on the 7710 Scanner Keyboard to light the Viewing Screen again.

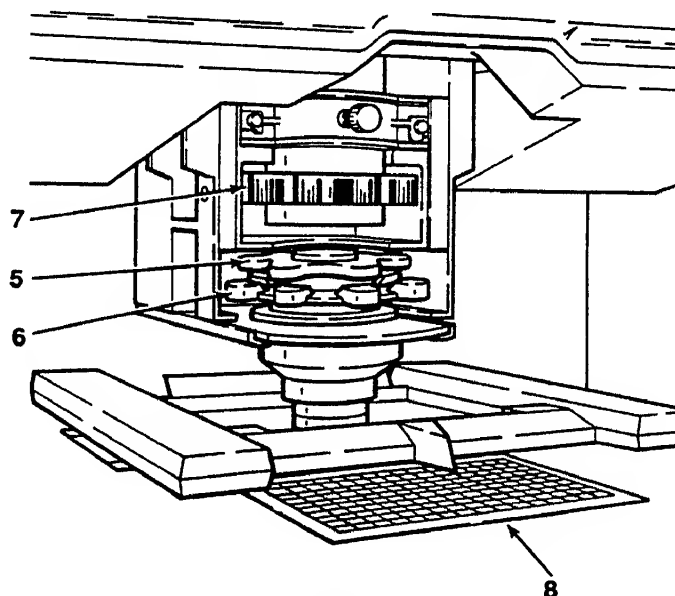
1. Pull the Film Transport (1) towards you until the Upper Glass Flat (2) opens.

Note

When using the 658, pull the Lateral Lock (3) up for locating images on fiche.

2. Place the selected microfiche on the Lower Glass Flat (4) having the title face down and toward you.
3. Push the Film Transport (1) away from you closing the Upper Glass Flat (2) and locating any image.



Locating an Image**Fiche Handlers (continued)****Note**

If you are using an optional Fiche Grid Index (8), the magnification of the Zoom Wheel and Fiche Grid Index must match to be of value.

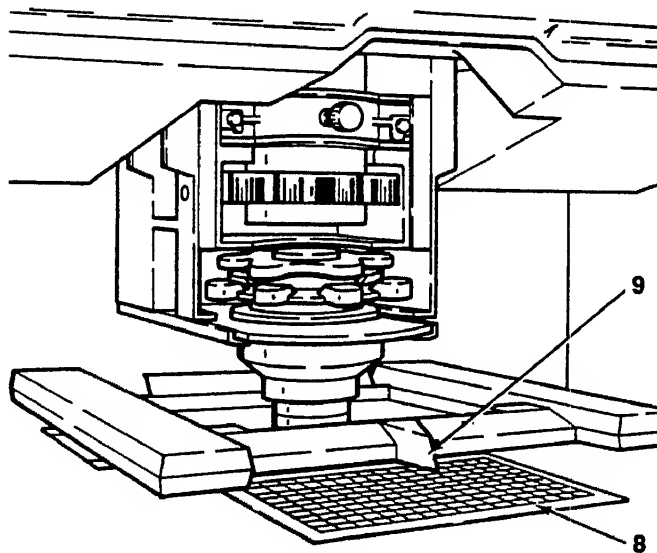
4. Turn the green colored Zoom Wheel (5) on the 7710 to display an image on the Viewing Screen as large as possible while remaining within the fiducial marks. If the film image cannot be adjusted to touch the fiducial marks, a Zoom Lens Assembly having a greater or lesser magnification is required (see tabbed section "READER-SCANNER", Changing the Zoom Lens Assembly, page RS-40).

Note

Once a clear sharp image has been focused, you should not have to refocus even when changing magnification.

When using the 658, the Spacer Tape should be on the bottom surface of the Lower Glass Flat or each frame may need to be refocused.

5. Turn the Focus Wheel (6), if needed, to adjust for the sharpest screen image.
6. Turn the Image Rotation Wheel (7) to rotate the image if necessary.

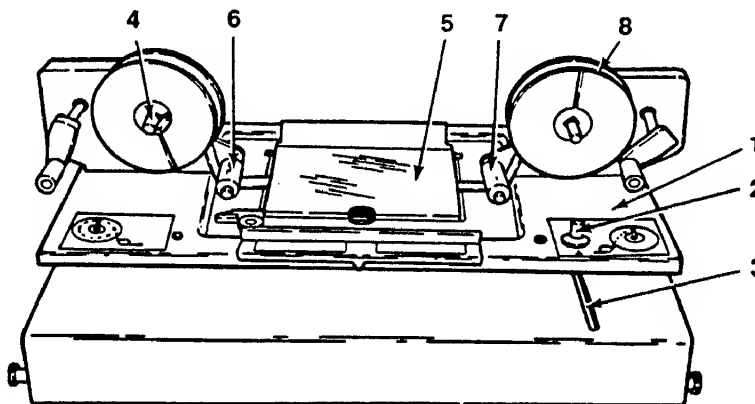
Locating an Image**Fiche Handlers (continued)**

7. Select the Fiche Grid Index (8) to correspond with the magnification of the Zoom Lens Assembly and format of the fiche and place it under the Pointer (9) so it points to the same grid coordinate as shown on the Viewing Screen. The Fiche Grid Index is magnetically held to the Film Transport.

Note

At 6.5X to 14X magnification, if there appears to be shadows in the corners of the Viewing Screen, move the Fresnel Lens Adjustment Handle to 6.5X to 14X.

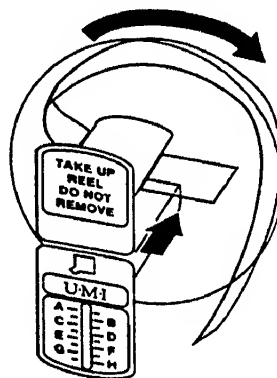
8. Knowing the frame you wish to view, move the Pointer (9) to the frame location on the Fiche Grid Index (8) and that frame will be displayed on the Viewing Screen.
9. For subsequent frames, move the Pointer (9) to the next known frame location on the Fiche Grid Index (8).

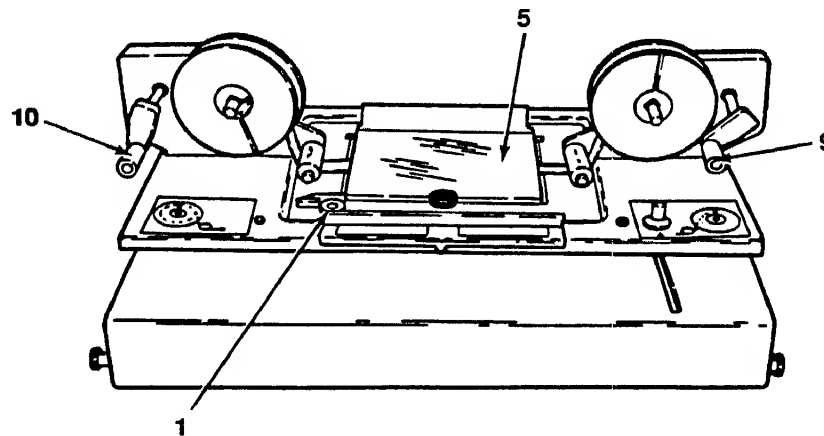
Locating an Image**Roll Film Handler****Note**

If the 658 had been used for viewing fiche, move the Film Transport (1) so the arrow for the Lateral Lock (2) is over the slot (3) and push down on the Lateral Lock to prevent the transport from side-to-side movement.

The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity. Press the **ENTER** Key on the 7710 Scanner Keyboard to light the Viewing Screen.

1. Place an open reel of 16 mm or 35 mm roll film on the Rewind Shaft (4) ensuring the reel is pushed all the way back. Film will unwind clockwise.
2. Pull the Film Transport (1) towards you until the Upper Glass Flat (5) opens.
3. Thread the film beneath the Left Film Guide (6), between the Upper Glass Flat (5) and Lower Glass Flat, beneath the Right Film Guide (7) and up to the "Quick-Thread" Take-Up Reel (8).
4. Loop the film leader over the hub of the "Quick-Thread" Take-Up Reel (8), into the slot, and around the hub in a clockwise direction.
5. Push the Film Transport (1) away from you to close the Upper Glass Flat (5).



Locating an Image**Roll Film Handler (continued)**

6. Push the Film Transport (1) away from you or toward you to center an image vertically on the Viewing Screen.

Note

If the roll film is difficult to advance or rewind, turn the Lower Glass Flat over (Spacer Tape up). See page FT-11.

7. Turn the Film Advance Handle (9) clockwise to take up the film slack.

Note

Do NOT turn the Film Advance Handle (9) counter-clockwise to rewind film.

8. Continue to turn the Film Advance Handle (9) clockwise to advance film centering the image horizontally on the Viewing Screen.

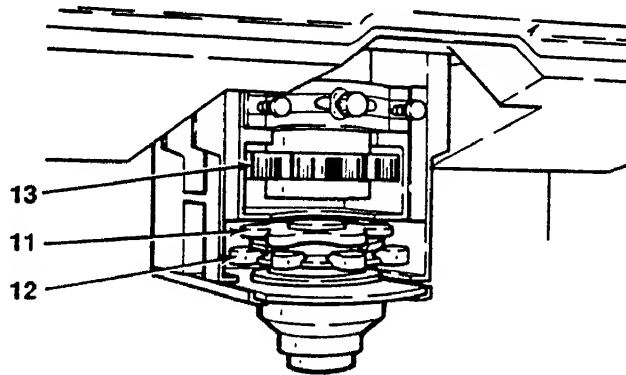
Note

Do NOT turn the Film Reverse Handle (10) clockwise to advance film.

9. Turn the Film Reverse Handle (10) counter-clockwise to rewind film.

Locating an Image

Roll Film Handler (continued)



10. Turn the green colored Zoom Wheel (11) on the 7710 to display an image on the Viewing Screen as large as possible while remaining within the fiducial marks. If the film image cannot be adjusted to touch the fiducial marks, a Zoom Lens Assembly having a greater or lesser magnification is required (see tabbed section "READER-SCANNER", Changing the Zoom Lens Assembly, page RS-40).

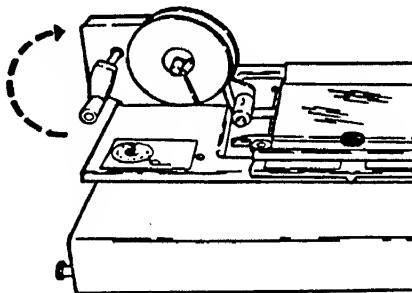
Note

Once a clear sharp image has been focused, you should not have to refocus even when changing magnification.

When using the 658, the Spacer Tape on the Lower Glass Flat should face up to prevent scratching the film.

11. Turn the Focus Wheel (12), if needed, to adjust for the sharpest screen image.
12. Turn the Image Rotation Wheel (13) to rotate the image if necessary.

At 6.5X to 14X magnification, shadows may appear in the corners of the Viewing Screen. Move the Fresnel Lens Adjustment Handle to 6.5X to 14X.

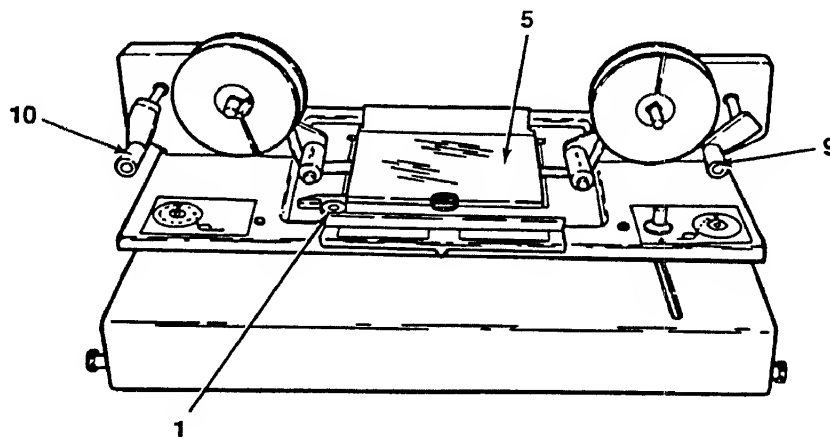


Note

If the image on the viewing screen is reversed, such as from original processed microfilm, position the Roll Film on the Rewind Shaft so film will unwind counter-clockwise. Film will unwind from bottom of the spool.

Locating an Image

Roll Film Handler (continued)



13. For subsequent frames, turn the Film Advance Handle (9) clockwise or the Film Reverse Handle (10) counter-clockwise.

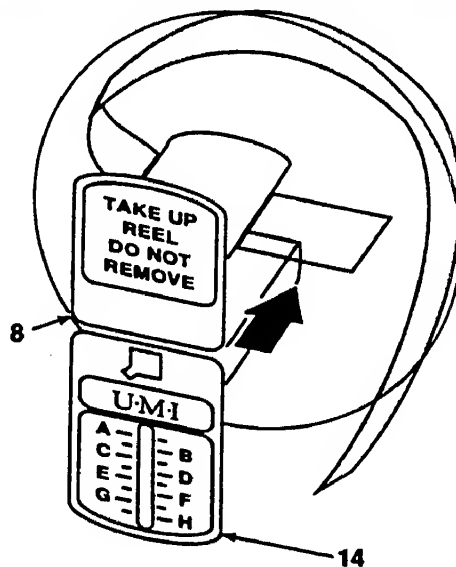
Note

The Film Gauge (14) of the "Quick-Thread" Take-Up Reel (8) may be used to roughly locate film images.

14. When you are completed with this roll of film, turn the Film Reverse Handle counter-clockwise until the film is completely rewound.

Note

The Projection Lamp for the Viewing Screen of the 7710 will automatically switch off after approximately 5 minutes of inactivity.



Cleaning the Glass Flats

If the image displayed on the Viewing Screen or prints has a stained or soiled appearance, the Upper Glass Flat and Lower Glass Flat should be cleaned. The procedures for cleaning the glass flats are slightly different for the 915 and 917, 916, and 658.

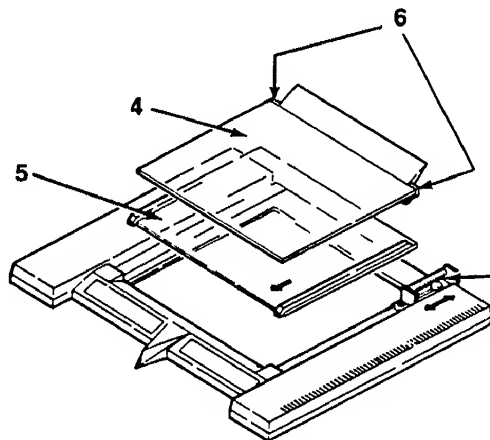
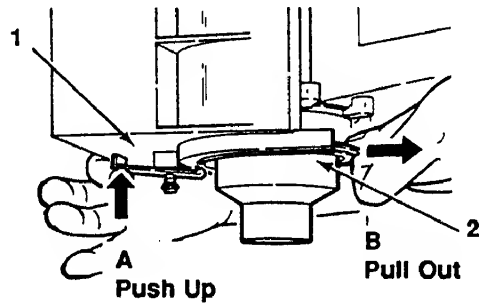
915 and 917 Single Fiche Handlers

1. Remove the fiche from the Fiche Handler.

Note

If a Lens Lock (1) has been installed, first push up on the Release Lever.

2. Remove the Zoom Lens Assembly (2) by grasping the handle and pulling straight towards you.
3. Push and hold back the Release for the Glass Flats (3).
4. Raise the right side of the Upper Glass Flat (4) and lift it out of the handler.
5. Push the Lower Glass Flat (5) to the rear.
6. While pushing and holding back the Release for the Glass Flats (3), raise the right side of the Lower Glass Flat (5) and lift it out of the handler.
7. Clean both Glass Flats with any commercial glass cleaner and a soft, clean cloth or tissue.
8. Re-install the Lower Glass Flat (5) only as shown by placing it within the Fiche Handler and sliding it toward you.
9. Position the Upper Glass Flat (4) so that the Pivots (6) are behind the Lower Glass Flat (5).
10. Re-install the Zoom Lens Assembly.



Cleaning the Glass Flats

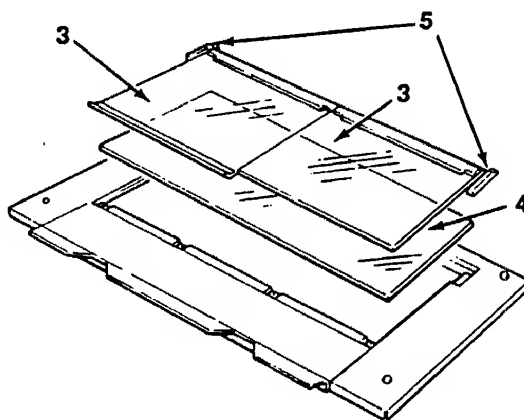
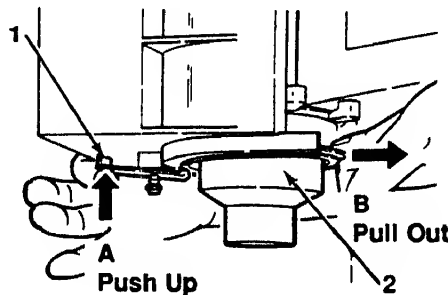
916 Dual Fiche Handler

1. Remove the fiche from the Fiche Handler.

Note

If a Lens Lock (1) has been installed, first push up on the Release Lever.

2. Remove the Zoom Lens Assembly (2) by grasping the handle and pulling it straight towards you.
3. Raise the front of either Upper Glass Flat (3) and lift it out of the handler.
4. Raise the front of the other Upper Glass Flat (3) and lift it from the handler.
5. Raise the rear of the Lower Glass Flat (4) and lift it out of the handler.
6. Clean all three glass flats with any commercial glass cleaner and a soft, clean cloth or tissue.
7. Insert the bevel of the Lower Glass Flat (4) beneath the tabs and gently lower it onto the rear supports.
8. Place the rear of the Right Upper Glass Flat (3) on the platform and gently lower it onto the Lower Glass Flat (4) aligning the Pivot Arm (5).
9. Place the rear of the Left Upper Glass Flat (3) on the platform and gently lower it onto the Lower Glass Flat (4) aligning the Pivot Arm.
10. Reinstall the Zoom Lens Assembly (2).



Cleaning the Glass Flats**658 Single Fiche and Roll Film Handler**

1. Remove the fiche or roll film from the Film Handler.

Note

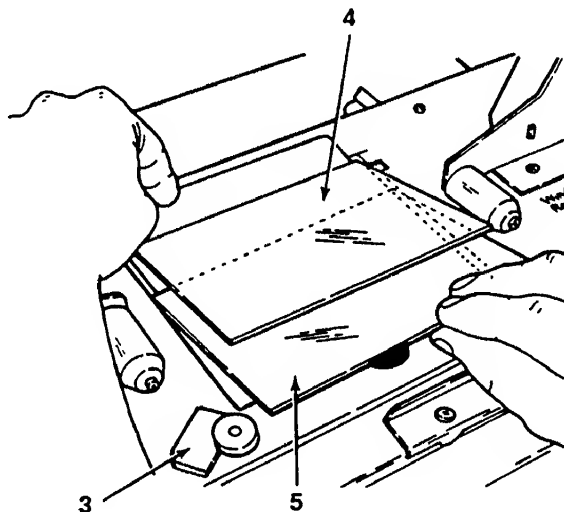
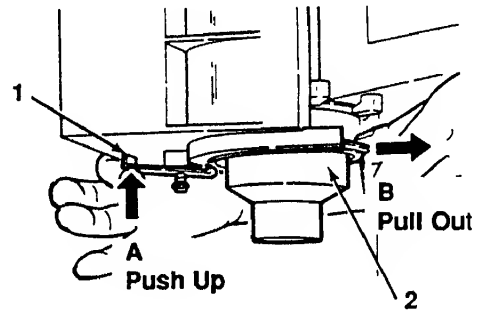
If a Lens Lock (1) has been installed, first push up on the Release Lever.

2. Remove the Zoom Lens Assembly (2) by grasping the handle and pulling it straight towards you.
3. Turn the Glass Flat Release Lever (3) counter-clockwise to release the glass flats.
4. While pushing the handle of the Upper Glass Flat (4) down, grasp the Lower Glass Flat (5) and, pulling it toward you, lift it out of the Film Handler.
5. Grasp the Upper Glass Flat (4) and, pulling it toward you, lift it out of the Film Handler.
6. Clean both glass flats with any commercial glass cleaner and a soft, clean cloth or tissue.

Note

The Spacer Tape on the Lower Glass Flat (5) should face down when viewing or printing fiche and face up when viewing or printing roll film.

7. Reinstall the glass flats in reverse order and turn the Glass Flat Release Lever (3) clockwise.
8. Reinstall the Zoom Lens Assembly (2).



Changing the Film Handlers

1. Press the 7710 Power Switch (1) to the "1" (OFF) position.

Note

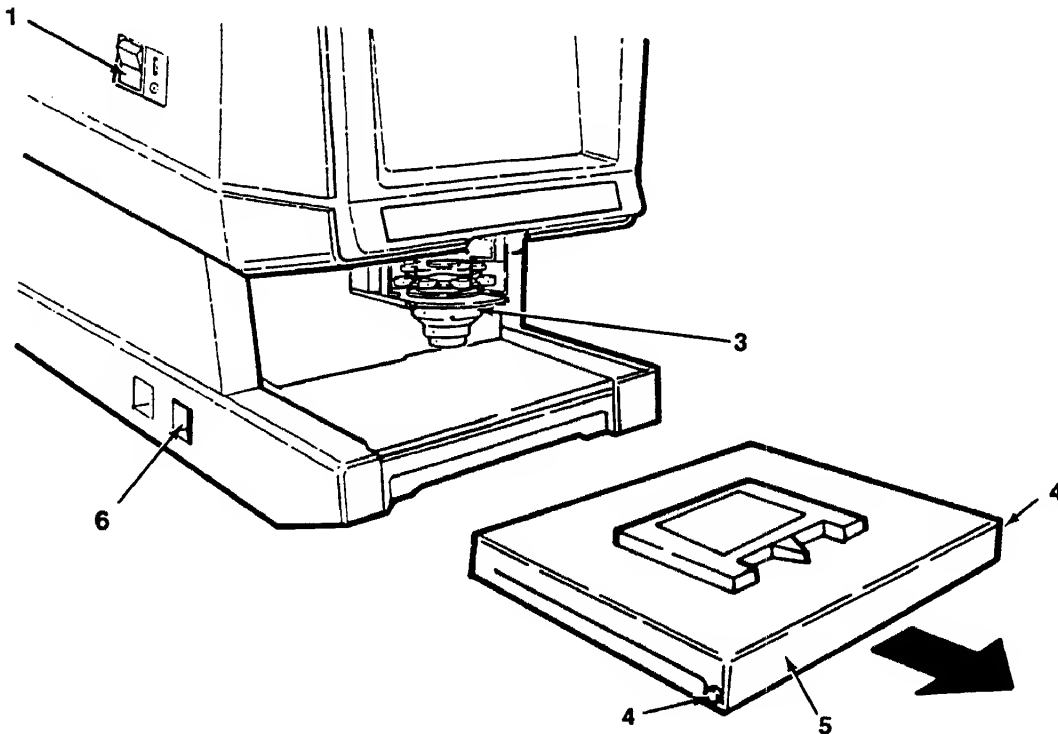
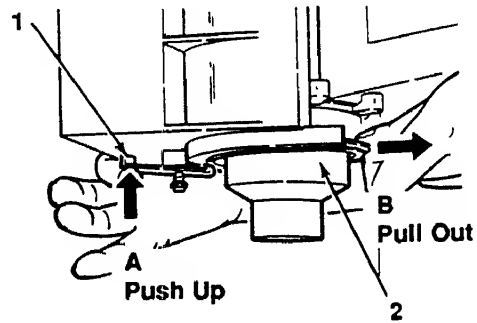
If a Lens Lock (2) has been installed, first push up on the Release Lever.

2. Remove the Zoom Lens Assembly (3) by grasping the handle and pulling it straight towards you.
3. Press both Transport Release Buttons (4) and slide the Film Handler (5) towards you out of the machine.
4. Position the new Film Handler within the guides and push it to the rear until it latches.

Note

If the new Film Handler is a 110 RFT or 210 CAT, plug the System Cable (not shown) into the System Connector (6).

5. Reinstall the Zoom Lens Assembly (3).



- 110 RFT
 - I1, I4
 - CI2, CI10, CI16
 - OS4, OS6, OS15
 - DT25
 - CF4
 - RF6-8
 - FT12
- 210 CAT
 - I1, I3, I4
 - CI2, CI10
 - OS4, OS6, OS15
 - DT2, DT26
 - CF2-5
 - FC15
 - PS11, PS29, PS34, PS51
 - RF8
 - FT12
- 3M Download Mode
 - OS13
 - FC15
 - PS47, PS50, PS54
- 3M Enhanced Download Mode
 - OS13
 - FC15
 - PS11, PS12, PS31-33, PS47, PS50, PS54
- 3MFAX
 - CI15
 - FC3
- 0-9 Keys
 - CI9
- + Key
 - CI9, CI13
 - DT8
 - PS13, PS14, PS31, PS32, PS50
- Key
 - CI9, CI13
 - DT8
 - PS13-15, PS31, PS50
- ↓ Key
 - CI13-15
 - OS9-12
 - FC3, FC8, FC12, FC14, FC16, FC17, FC20, FC22, FC23, FC25, FC27
- ↑ Key
 - CI13-15
 - OS9-12
 - FC3, FC8, FC12, FC14, FC16, FC17, FC20, FC22, FC23, FC25, FC27, FC28
- Key
 - CI13
 - RS8, RS12
- ← Key
 - CI13
 - RS8, RS12
- A**
 - A Key**
 - CI8
 - DT9
 - PS11, PS14, PS15, PS17, PS20-22, PS25, PS26, PS29, PS31, PS37-39, PS50
 - Accessory Table Assembly**
 - CF4
 - RF8
 - Add Paper Indicator**
 - LP2
 - Additional Subject Paragraph**
 - FC9, FC11-13
 - Adjustable Condenser Lens**
 - I3
 - DT29
 - RS40
 - Allas**
 - FC27, FC28
 - Alt Key**
 - CI13
 - Asynchronous Protocol Interface**
 - I2-4
 - OS13
 - RS43
 - FC15
 - PS46, PS51, PS54
 - AUTO Key**
 - CI9
 - OS14
 - DT11
 - FC15
 - PS6, PS9, PS12-14, PS18, PS23-29, PS32, PS34, PS47-49, PS52
 - Auto-FAXIng**
 - PS9
 - Auto-Function**
 - PS6, PS9, PS33
 - Auto-Printing**
 - PS6, PS23, PS28, PS29, PS46, PS49
 - Auto-Scanning**
 - FC15
 - PS23, PS28, PS46, PS49

B**B Key**

CI8

OS14

DT8, DT10, DT11

FC15

PS4, PS5, PS8, PS11, PS12, PS14, PS17, PS19,
PS23, PS29, PS31, PS33-35, PS43, PS49, PS50,
PS52**Backspace Key**

OS11

FC8, FC11, FC12, FC27, FC28

Backup Phone List

I1

FC17, FC23-25

Banner Line

CI15

Batch Printing

CI9

DT11

PS5, PS11

Batch Scanning

DT11

Blip Encoding

I3

PS55

Brightness Control

CI12, CI14

Broadcast Cover Sheet

OS11

FC2, FC6, FC11-14, FC17

C**Calling for Service**

DT2, DT24, DT25, DT29, DT33, DT39

Camera Blip Mode

PS42

CANCEL Key

CI3, CI4

OS7, OS10

RS9, RS30, RS32

PS9

CAR Mode

OS13

FC15

PS46, PS48, PS50, PS54

CART Key

CI8

PS14, PS16, PS17, PS28, PS30, PS31, PS35,
PS47, PS48**Cartridge ANSI Transport**

I1, I3

CI10

DT2

FC15

PS51

Cartridge Indicator

CI10

OS4

LP9, LP11

Cartridge Insertion Slot

OS4

CF3, CF8, CF9

Cartridge Release Lever

CI10

DT26

CF6

Charge Corona

CI11

DT31-33

LP11-14

Cleaning Cartridge

CF3

Cleaning Lamp

CI11

DT32

LP9, LP11-14

Cleaning Lamp Cover

LP14

Cleaning Pad

CI11

DT32, DT33

LP4-7, LP15

CLR Key

CI7, CI9

OS13, OS14

DT8-12

RS16, RS30

FC15

PS2-6, PS8, PS9, PS11, PS12, PS16, PS18,
PS19, PS23, PS28-30, PS33-35, PS42, PS43,
PS47-50, PS52**Communications**

I1

CI9

OS13

DT11, DT12

RS43

FC2, FC15

PS7, PS11, PS12, PS14-16, PS31-33, PS46,
PS48, PS50, PS54**Communications Command Codes**

PS50

Contrast Control

CI3, CI14

OS2

DT3, DT27, DT29

C (continued)**Controller**

I1-3

CI3, CI4, CI6, CI11-15

OS3, OS8-11, OS13, OS15

DT4, DT14-23, DT36, DT39

RS8

FC2-7, FC15, FC17, FC19, FC20, FC22-25, FC31, FC32

PS7, PS46-48, PS51, PS52

Controller Board Error Messages

DT5

Controller Display

CI14

OS3, OS11, OS12

FC17, FC29

PS7

Controller Keys

CI13

FC5

Controls and Indicators

I1

CI2-17

COPY# Key

CI4, CI5, CI7

RS4, RS32-34

Corona Assemblies

LP9, LP23

Cover Sheet

I1

CI15

OS11, OS12, OS14

DT14, DT36

FC2-4, FC6-22, FC26-30

PS7, PS47, PS48, PS51-53

CSID

FC10, FC26-28

Ctrl Key

CI13

Cursor

CI3, CI7, CI8, CI13-15

OS11, OS12

FC7, FC8, FC10, FC12-14, FC16, FC17, FC26-29

PS7

Cursor/Highlight Control Keys

CI13

D**Data-In-Buffer**

CI11

Date Field

CI15

OS12

FC8, FC12

Default Parameter Settings

CI4

Default Values

RS16, RS20, RS22, RS30, RS33

FC27

DEFLT Key

CI4, CI7

Delayed Delivery Field

FC7, FC10, FC12

Delete Key

CI13

Delivery Delay Date

OS12

Delivery Time

OS12

FC11, FC28

Developer Assembly

DT7

LP4, LP5, LP8-10, LP20, LP21

Display Codes

I1

OS2-4, OS8, OS10, OS12

DT2, DT4, DT8-13, DT21-23, DT39

FC4, FC19

PS42

Display Codes and Troubleshooting

I1

OS2-4, OS8, OS10, OS12

FC4

PS42

DMS (Document Management Systems)

I4

OS13

DT12, DT15, DT18

FC15, FC30

PS47, PS48, PS51

Document Package

I1

OS11, OS12

DT21

FC2, FC6-15, FC18-22, FC29

PS7, PS8, PS52, PS53

DOS (Disc Operating System)

CI13

OS3, OS15

FC26, FC30, FC31

Download

OS13

DT12

FC15, FC30

PS11, PS12, PS14-16, PS30-33, PS43, PS46-51,

PS53, PS54

Download Registers

PS16, PS46-49

Drive Roller

DT2

CF3

E**END Key**

CI13, CI15

OS11

PS7

Engine Error Messages

DT6

E (continued)**Enter Key**

CI13-15

OS3, OS9-13, OS15

DT21, DT36

RS5, RS8

FC3, FC7, FC8, FC11, FC12, FC15-21,

FC23-25, FC27-31

PS7, PS47, PS48

ENTER Key

CI3, CI4

OS2, OS4, OS7, OS8, OS10

DT3, DT4, DT34, DT36, DT37

RS2-6, RS8-11, RS13-23, RS30-37

FC4

PS5, PS7, PS9

RF2, RF4

FT2, FT5

Environmental Conditions

I5

Error Code Display

CI10

OS4

CF7

Error Indicator

CI11

DT5

Error Messages

DT2, DT3, DT5-7

Esc Key

CI4, CI13

OS9, OS11

DT36

FC5, FC8, FC11-15, FC17, FC20, FC22, FC24,

FC25, FC27, FC29, FC30

PS7

Exit 3MFAX

OS15

FC27

Exposure

CI4, CI5, CI7

OS7

RS6-9, RS33, RS35, RS36, RS42

LP15, LP19

PS52

F**F1 Key**

CI6, CI7

OS11

RS35, RS36

FC5, FC8, FC12-16, FC19, FC20

PS7, PS8

F2 Key

CI6, CI7

OS11

RS35-36

FC8, FC10, FC12-14, FC17, FC20, FC22, FC27

F3 Key

CI6, CI7

RS35-36

FC20, FC22

F4 Key

CI7

OS11

FC8, FC12-14, FC17, FC20

F5 Key

OS11

FC5, FC14, FC17, FC20, FC22, FC28, FC29

F6 Key

FC14, FC17, FC20

F7 Key

FC14, FC17, FC20

F8 Key

OS12

FC5, FC8, FC12-14, FC17, FC20, FC22, FC28

F9 Key

OS11

FC8, FC11-13, FC17

F10 Key

FC8, FC11-13, FC17

FAX# Field

FC10, FC16

FAX Controller

I1

CI13

OS11, OS12

FC6

PS8, PS23

FAX Interface Boards

FC26

FAX Queue

OS12

FC18, FC19

FAXing a Document Package

I1

FC6-15, FC29

Fiche Grid Index

I4

CI17

DT24

FT3, FT4

Fiche Handlers

I1, I4

CI17

OS6

FT2-4, FT9

Fiducial Marks

OS4-6

DT28, DT30

RS12

RF4

FT3, FT7

Film Advance Handle

CI17

FT6, FT8

F (continued)**Film Clamp**

I4

CI16

RF3

Film Control Code

DT8, DT9, DT11

PS11, PS29, PS42, PS43

Film End Switch

DT25

RF2, RF3

Film Guides

DT25

RF2

FILM Key

CI3-5, CI7

RS2, RS32-34

Film Leader

OS4

DT2, DT8, DT9, DT26

RF3

FT5

Film Odometer

CI10, CI16

OS5, OS6

DT2, DT26

RF3, RF5

Film Odometer Reset

CI10, CI16

OS5

DT2, DT26

RF3

Film Polarity

CI4, CI7

DT30

RS2, RS3, RS35, RS36

Film Reverse Handle

CI17

FT6, FT8

Film Speed Control

CI10, CI16

OS4, OS6, OS15

DT8, DT25, DT26

CF2

PS11, PS29

RF2-6

Film Spool Spindle

DT25

RF2

Film Take-Up Disc

CI16

DT25

RF2, RF3

Film Take-Up Reel

CI16

OS4

DT25

CF7, CF8

RF2

Film Transport

I1-4

CI10, CI16, CI17

OS4, OS6, OS15

DT2, DT24-26, DT28, DT30

CF4

PS44

RF7, RF8

FT2, FT4-6

Film Traverse Control

CI10, CI16

OS5

DT8

PS4

RF4

Filter Glass

DT27

PS44, PS45

Focus Wheel

CI2

OS5

PS3

RF4

FT3, FT7

Font Select/Portrait/Landscape Mode Select Key

CI12

Formatting a Backup Diskette

FC2, FC24, FC31

Form Feed/Mode Key

CI12

Free Bytes

CI15

FC3

Fresnel Lens Adjustment Handle

CI2

OS5

DT29, DT30

RF4

FT4, FT7

FRM Key

CI8

PS10, PS14, PS16-18, PS30, PS31, PS33, PS35,

PS47, PS48

Function Keys

CI6, CI13

RS35

FC17

PS6, PS9, PS23

Fusing Assembly

I5

LP6, LP7, LP15, LP16, LP19, LP21

Fusing Assembly Cover

LP6, LP7

FXEND Key

CI4, CI13

OS9, OS11

DT36

FC15

G**Gain**

CI4, CI6, CI7

OS7

RS6, RS7, RS32-36

Glass Flat Release Lever

CI17

FT11

Glass Flats

DT28, DT30

CF2

RF2, RF6

FT9-11

H**Halftoning**

RS30

Highlight

CI13-15

OS9-11, OS13, OS15

RS8, RS9

FC3, FC14-19, FC21, FC23-25, FC27, FC31

PS7, PS47, PS48

Home Key

CI13, CI15

FC3, FC8, FC12, FC14, FC17, FC20, FC22, FC25

Hopper Notches

LP5

Host Computer

I1-4

CI3

OS13, OS14

DT11, DT12

FC2, FC6, FC7, FC15

PS7, PS11, PS12, PS14, PS15, PS23, PS29-32,

PS43, PS46, PS47, PS50-52

I**Image Enhancement**

I6

OS7

FC15

Image Printing

DT24, DT30-33, DT39

Image Resolution

CI5

OS7

DT17

RS5

Image Retrieval

DT2, DT24-27, DT39

Image Rotation Wheel

CI2

OS5

DT28, DT30

PS3

RF4

FT3, FT7

Image Viewing

DT24, DT28, DT29, DT39

INC/DEC Key

CI9

PS13, PS17, PS18, PS30, PS32

Initiate On-Line FAX

OS13

FC3, FC15, FC30

PS47, PS48

Ins Key

CI13

Instruction Line

CI15

FC10

K**Key Operator**

CI6

PS9

Keyboard

I3

CI2, CI8, CI13

OS2-4, OS7-11, OS13

DT11, DT34, DT36, DT37

RS2-5

LP2, LP3, LP17-19, LP21

FC4, FC6, FC7, FC15, FC32

PS2, PS3, PS5, PS7-9, PS13-15, PS19, PS28,

PS36-41, PS43, PS46-48, PS50, PS51, PS53

RF2, RF4

FT2, FT5

L**L Key**

CI8, CI9

OS13

DT9

FC15

PS11-16, PS28-33, PS47, PS48, PS50

Label Printer

DT12

PS46-48

Lamp Bell Guides

RS39

Lamp Extractor Lever

RS38

Lamp/Mirror Assembly

RS37-39

Language

FC26, FC27, FC29

Laser Printer

I1-3, I5, I6

CI3, CI5, CI6, CI11, CI12

OS3, OS8, OS9, OS15

DT5, DT14, DT15, DT20, DT24, DT31-34, DT36,

DT38

RS2, RS4-6, RS8, RS9

LP2, LP4, LP23

FC4, FC20

PS6, PS52

FT2

L (continued)**Lateral Lock**

CI17

DT24

FT2, FT5

Leader Code

PS42, PS43

LED Indicator Error Messages

DT7

Left Side Door

LP8, LP11, LP14

Lens Lock

I4

DT24

FT9-12

Line Fuse

LP22

Loading Film

RF2, RF3

Locating an Image

DT24

PS3, PS4, PS11

RF4, RF5

FT2-8

Lock Lever

LP4, LP5

Lower Paper Tray

CI11, CI12

DT6, DT7

LP2, LP18

Lower Paper Tray Select Indicator

LP2

M**Macros**

OS7

RS35, RS36, RS43

Main Menu

I1

CI15

OS3, OS9-13, OS15

DT14, DT36

RS8, RS9

FC3-5, FC7, FC8, FC12, FC16-25, FC27, FC30,

FC31

PS7, PS46

Maintenance Indicator

CI11

Making A Test Print

FC15

Manual and On-Line Systems

FC6

Manual Film Scan Control

CI10, CI16

OS4, OS6

CF9

PS4, PS34

RF3

MASK Key

CI4, CI5, CI7

RS9, RS10, RS13-15, RS17-19, RS21, RS23, RS32-34

Mask Mode

CI5

RS11, RS13

Masking

I3

CI4, CI6, CI7

OS7

RS8-11, RS13-18, RS20-24, RS28, RS29, RS35,

RS36

FC5

PS10, PS52

MDIIP (Microfilm Digital Image Improvement Process)

I6

OS7

MDIIP Key

CI4, CI7

RS6, RS32-34

Memory Register

CI9

DT10

PS4, PS10, PS12, PS16-18, PS28, PS30, PS32-35

Message Display

CI11, CI12

DT5-7

LP2, LP8

MMMFAX Configuration File

FC2, FC6, FC7, FC9, FC10, FC15, FC21, FC24, FC26-31

MMMFAX Program

I3

CI13-15

OS3, OS15

DT14, DT17, DT19

FC3, FC31

MOD Key

CI9

OS13, OS14

DT8, DT11

FC15

PS2, PS10, PS13, PS17-19, PS22, PS23, PS27-30, PS32-35, PS42, PS47-49, PS52

Modem

DT21, DT39

Monitor

I3, I6

CI13-15

OS3, OS10, OS11, OS15

FC26, FC33

PS47, PS48

N**Negative Film**

CI3

RS3

CF10

PS55

RF9

Num Lock Key

CI13

Numeric Keys

CI6, CI9, CI13

RS35

O**On-Line/Off-Line Indicator**

CI11

OS3

LP2

On-Line/Off-Line Key

LP2

OPC Cartridge

CI11

DT6, DT7, DT31, DT32

LP4, LP9-11, LP15, LP19-21, LP23

Operating in a Computer Communications Setup

FC2

PS7, PS33, PS46

Operating Sequence

I1

DT2, DT27-30, DT36

RS9

FC3

PS3, PS46

Operator Maintenance Indicator

CI11

Options Management Menu

FC3, FC23-25

OVRD Key

CI4

RS32

Ozone Filter

I5

P**Page Counter**

CI11

DT7

Page Search Display

CI3

OS2

DT8, DT27

PS2, PS47, PS49

PAGE SEARCH Key

CI3, CI9

PS5, PS8, PS11, PS14, PS29

Page Search Keys

CI2, CI3, CI8

Paper Exit Cover

DT6

LP6, LP7, LP15, LP16, LP19, LP21

Paper Guide

DT33

LP2

Paper Jam

CI11

DT6

LP17-21

Paper Jam Error Messages

DT6

Paper Jam Indicator

CI11

LP17

Paper Size

DT7

RS5, RS36

LP23

Paper Supply Indicator

CI11

Paper Tray

CI11, CI12

OS3

DT6, DT7, DT18, DT20, DT33

LP2-4, LP9, LP17, LP18, LP20, LP21

Paper Tray Cover

LP2-4, LP17, LP18

Parameter Macros

OS7

RS35, RS36, RS43

Pause Key

CI13

Pending Queue

FC2, FC3, FC13, FC18, FC20-22

Pg Dn Key

CI13

Pg Up Key

CI13

Phone Number Field

CI15

PHOTO Key

CI4, CI5, CI7

RS30-33

Photo Mode

I3, I7

Plastic Window

DT27

PS44, PS45

PMTR Key

CI4

OS7

RS2, RS33

Pointer

I4

CI17

FT4

Positive Film

RS3

PS55

P (continued)**Power Indicator**

CI11, CI13, CI14

OS3

DT31

Power Strlp

OS2, OS15

RS43

Power Switch

CI2, CI8, CI11, CI13, CI14

OS2, OS3, OS15

DT3, DT12, DT13, DT25-27, DT31

RS37, RS39

LP4, LP9, LP15

CF4, CF5, CF7, CF9

PS44

RF7, RF8

FT12

Power Up Error Messages

DT2

Power Up Fault Log

DT3, DT4

Print Engine Sensor Error Messages

DT7

PRINT Key

CI3

OS9

DT4, DT20

RS3, RS4, RS8, RS9, RS11, RS20, RS22, RS30

FC4

PS5, PS8

Print Mode

CI6

RS8

PS5

Printer Test

DT38

Printing by Batches from the Page Search

PS5, PS8

Printing the Processed Queue Stats

FC2, FC23

Print Scrn Key

CI13

Prism Assembly

CI2

DT28

RS40

Prism Release

CI2

RS40

Processed Queue

DT16, DT21

FC2, FC3, FC18-20, FC23, FC29

Projection Lamp

I5

CI3, CI5

OS2, OS4, OS8, OS10

RS37-39

FC4

PS7

RF2, RF4

FT2, FT5, FT8

R**Range Auto-FAXing**

PS9

Range Auto-Printing

PS6

Reader-Scanner

I1-6

CI2-8

OS5, OS7-11, OS14, OS15

DT2-4, DT9, DT12, DT24-30, DT34

RS4, RS6, RS25, RS26, RS34, RS35, RS37,

RS39-43

CF4, CF7, CF10

FC2, FC4, FC15

PS4-9, PS42-44, PS46, PS47, PS49-53

RF4, RF9

FT2, FT3, FT7

Ready Indicator

CI11

OS3

Receiver Field

CI15

DT36

FC7, FC10, FC12, FC14, FC26, FC27, FC29, FC30

Receiver List

CI15

FC14

Receiver Phone List

DT36

FC2, FC3, FC12-14, FC16

Release Lever

CI10, CI17

DT24, DT26

LP6, LP15, LP19

CF6

PS45

FT9-12

Reset the 7710

DT37

Resolution

I6

CI4, CI5, CI7

OS7

DT17, DT22

RS5, RS35, RS36

LP23

Restoring the Phone List Files

FC2, FC25

Return to Main Menu

FC23-25

R(continued)**Reverse Video**

CI14, CI15

OS10

FC3

Right Side Door

RS37, RS39

RNGE Key

CI9

PS6, PS9, PS12, PS13, PS19-27, PS30, PS32,

PS33, PS49

Routing Code

DT18

FC30

PS51, PS52

RSET Key

CI7, CI9

DT9, DT10

RS33

PS12, PS14, PS31, PS33, PS47, PS52

RUN Key

CI9

OS14, OS15

DT8, DT10, DT11

PS2-4, PS10-13, PS17, PS19, PS23,

PS28-30, PS32, PS33, PS36-41, PS43, PS49

S**Safeguards**

I5

Scan Count

CI6

DT37

Scan Failure Messages

DT4

SCAN Key

CI3

OS10, OS11

DT4, DT20

FC4

PS5, PS7, PS8

RF3-5

Scan Parameter Settings

CI4

Scanner Display

CI3, CI8

OS2, OS7, OS8, OS10, OS11

DT3, DT4, DT29

RS2, RS6, RS8, RS9, RS30, RS32-34

FC4

PS7, PS52

Scanning Keys

CI2-7

Scroll Lock

CI13

SCSI Failure Messages

DT4

Search Mode

CI3, CI8, CI9

DT11, DT27

PS2, PS3, PS13, PS28, PS32, PS42, PS46, PS48,

PS50

Sender Field

FC13

Sender List

CI15

FC7, FC12, FC17

Sender Phone List

FC3, FC8, FC13, FC16

Separation Pawls

DT31, DT33

LP7, LP9, LP11, LP15, LP16

SET Key

CI8

DT10

PS4, PS6, PS9, PS11, P314, P217-20, PS22-29,

PS34, PS35, PS49, PS52

Shield Lens

CI11

DT32, DT33

LP9, LP11-14, LP23

Shift Key

CI12, CI13

OS3

LP2

FC8, FC12, FC27

SIZE/RES Key

CI4, CI5, CI7

RS5, RS32-34

Specifications

I1

DT27

RS42, RS43

LP23

CF10

FC32, FC33

PS54, PS55

RF9

Spring-Loaded Film Guide

CF8

Standby

OS8, OS10

RS42

LP23

FC4

PS7

Status Line

CI15

FC18, FC20

Status of FAX Queues

I1

FC2, FC3, FC18, FC20

Status of Pending Queue

FC2, FC3, FC18, FC20-22

Status of Processed Queue

DT21

FC2, FC3, FC18-20

S(continued)**Step Function**

PS4, PS19, PS23

Step Keys

PS4, PS19, PS21, PS22

Step Test

I3

CI6

RS6, RS7

STOR Key

CI8, CI9

PS12, PS13, PS16-18, PS28-30, PS32-35

STP Key

CI9

OS14

DT11

FC15

PS12, PS13, PS18-22, PS24-27, PS29, PS32,

PS34,

PS47-49, PS52

Subject Field

CI15

OS11

FC7, FC8, FC10, FC12, FC26, FC27, FC29, FC30

PS7

Supplies

I1

RS43

LP23

System Display Messages

DT4

T**Tab Key**

CI13-15

OS12

FC8, FC12, FC27, FC28

Tagging Records

FC2, FC12-14

TEST Key

CI6, CI7

DT4, DT34, DT36, DT37

RS6, RS35, RS36

PS5, PS8, PS9

Test Mode

DT34, DT36, DT37

RS6, RS35

PS5, PS8, PS9

Test Pattern

CI6, CI11

DT23, DT34-36

Test Print

FC15

Test Switch

CI11

DT38

Threshold

I6, I7

CI4, CI6, CI7

OS7

RS6, RS7, RS32-35

PS52

Time Field

OS12

To Field

FC7

Toner Cartridge

CI11

DT5, DT7

LP4-8

Toner Collection Bottle

LP8, LP12, LP23

Toner Supply Indicator

CI11

DT5

Transfer Program

FC5

Transfer Corona

CI11

DT31, DT32

LP9, LP11-14, LP17, LP19

Transport Release Buttons

CF4, CF5

RF7, RF8

FT12

Tray Select/ Automatic Tray Select Key

CI12

LP2

Troubleshooting Tables

I1

DT24 DT39

Typewriter Keys

CI13

FC8, FC11, FC12, FC14, FC17

U**Upper Paper Tray Select Indicator**

CI12

LP2

Used Toner Collection Bottle

LP8, LP12

V**Variations in the FAXing Process**

FC6

Version

CI6, CI15

DT34, DT39

FC27, FC28

V(continued)**Viewing Screen**

I3, I6, I7

CI2, CI3, CI5, CI10, CI16, CI17

OS2, OS4-6, OS8

DT28-30

RS2, RS3, RS6, RS8, RS9, RS11-13, RS16, RS19,

RS20, RS22, RS28-30, RS37

CF2

PS3, PS4, PS11, PS52

RF2-4, RF6

FT2-9

W**Waiting for Image X**

OS11

WorkManager

I4

OS13

DT12, DT14, DT15

FC15, FC30

PS47, PS48

Workstation

I3

OS2, OS15

X**XPOSE Key**

CI4, CI5, CI7

RS8, RS32-34

Z**Zoom Lens Assembly**

CI2

OS5

DT24, DT28-30

RS40, RS41

CF2, CF4, CF5, CF7

PS4

RF4, RF6-8

FT3, FT4, FT7, FT9-12

Zoom Lens Barrel

RS40, RS41

Zoom Lens Handle

RS40, RS41

Zoom Prism Bracket

RS40, RS41

Zoom Wheel

CI2

OS5

DT24, DT28

RS40, RS41

PS3, PS4

RF4

FT3, FT7